MEASURING ATTRIBUTES OF WILDERNESS CHARACTER

BLM IMPLEMENTATION GUIDE

Version 1.3

This document is intended to be a short guide to *what* gets measured and how these measures are aggregated to assess trends in wilderness character, but not *why* each measure is important or how it was decided upon. Also included are brief outlines on how the data are processed and stored. This document assumes the reader has a working knowledge of its associated concepts and terms.

This document tiers off of ***Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System***.

For further information on the conceptual foundation of this work, see ***Monitoring Selected Conditions Related to Wilderness Character: A National Framework***.

This document borrows from the ***Forest Service Technical Guide for Monitoring Selected Conditions Related to Wilderness Character***.

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Introduction

This monitoring effort is based on the statutory requirements of The Wilderness Act of 1964. In both the Act's "Statement of Policy" (Section 2(a)) and "Use of Wilderness Areas" (Section 4(b)), managers are directed to "preserve wilderness character." Though never explicitly defined, "wilderness character" is circumscribed in the Act by four qualities required of wilderness areas, and a fifth quality which includes values the Act says "may" be present (Section 2(c)). The "qualities" of wilderness character are:

1) **Untrammeled:** A "trammel" is literally a net, snare, hobble, or other device that impedes the free movement of an animal. Here, used metaphorically, "untrammeled" refers to wilderness as essentially unhindered and free from modern human control or manipulation. The Wilderness Act defines wilderness as, "an area where the earth and its community of life are untrammeled by man," and is "affected primarily by the forces of nature."

2) **Natural:** Wilderness ecological and evolutionary systems are substantially free from the unintentional effects of modern civilization. It is "protected and managed so as to preserve its natural conditions."

3) **Undeveloped:** Wilderness has minimal evidence of modern human occupation or modification. It is land "retaining its primeval character and influence," "without permanent improvements or human habitation," "with the imprint of man's work substantially unnoticeable," and "where man himself is a visitor who does not remain."

4) **Solitude or Primitive and Unconfined Recreation:** Wilderness provides opportunities for people to experience natural sights and sounds, solitude, freedom, risk, and the physical and emotional challenges of self-discovery and self-reliance. It "has outstanding opportunities for solitude or a primitive and unconfined type of recreation" and "shall be administered…in such manner as will leave them unimpaired for future use and enjoyment as wilderness."

5) **Unique / Supplemental:** Wilderness areas "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." Though these values are not required of any wilderness, where they are present they are part of that area's wilderness character, and must be protected as rigorously as any of the four required qualities. These values may or may not overlap with the other four qualities. They are usually identified in the area's designating legislation, legislative history, original wilderness inventory, wilderness management plan, or at some other time after designation.

An interagency team developed thirteen indicators and suggested possible measures used to monitor trends in wilderness character as described in *Keeping It Wild: an Interagency Strategy to Monitor Trends in Wilderness Character*. A small interdisciplinary team of BLM employees selected the measures for those indicators to be used in BLM wilderness areas, and developed the techniques detailed to generate data for each measure. The BLM Implementation Guide diverges from *Keeping It Wild* in the explicit development of the Unique / Supplemental quality. The measures of that quality, concerning cultural resources and threatened or endangered species, are likely to be important to many wildernesses under the stewardship of the BLM. In addition, BLM employees may propose measures that address unique attributes of a particular wilderness area that are not measured elsewhere (e.g., paleontological values). This Implementation Guide likely will be revised repeatedly over time. Each iteration will adhere to the core commitment to use measures that are adequate yet cost-effective. In meeting this commitment, the BLM must follow two principles:

1) Specific data sources must be referenced in reports, so that departures from baseline conditions can be tracked over many years. It is expected that every Field Office will maintain individual files for each wilderness in its jurisdiction, inventory maps, data-gathering protocols, or other metadata sufficient for tracking trends.

2) Monitoring the select indicators described in *Keeping It Wild* is necessary but not sufficient for the proper stewardship of an individual wilderness. The monitoring described by this framework is part, but **only part**, of the monitoring plan needed for an individual unit of the National Wilderness Preservation System. For instance, it may be essential for some

wilderness managers to monitor the stocking of fish in wilderness lakes, but since this is not an issue in most BLM-managed wildernesses, no such measure is included here.

The data used in measures for wilderness indicators necessarily come from multiple sources and cover multiple disciplines. Successful monitoring and detection of trends require that wilderness specialists work closely with other Bureau staff in practically every aspect of the BLM. Specialists should confer with archaeologists, fire management specialists, botanists, range conservationists, recreation planners, geologists, invasive weed specialists, among others. Solid working relationships with field office and district staffs is essential to monitoring – and stewardship – of the wilderness resource.

Because of differences between wilderness areas due to geography, biology, legal constraints, and social pressures, these indicators **should not** and **cannot** be used to compare different wildernesses. They are designed to monitor changes at **one** wilderness over time. What can (and will) be compared and aggregated at a regional and national level is simply whether wilderness character is improving, stable, or degrading.

Every effort has been made to include measures which are feasible and significant. Some measures are not entirely within the control of the BLM; a few are almost entirely outside the BLM's control. They are included as important measures of changes in wilderness character, but should not be used to evaluate management effectiveness. Conversely, some important measures not entirely within the BLM's control are not included simply because of the infeasibility of gathering data of sufficient refinement for assessing trends at one wilderness (e.g., night sky visibility). In addition, arguably important measures listed in *Keeping It Wild* are not included here because of anticipated limitations in BLM budget and personnel.

Since the monitoring of trends in wilderness character is so new, both conceptually and in practical implementation, a section in this guidance outlines processes for managing changes to this methodology. Future editions of this guidance will also include sections on data analysis, reporting, and storage. The details of data handling will largely depend on actions taken by cooperating agencies – both the other wilderness-managing agencies and the United States Geological Survey. These sections are currently in the early stages of development and will be made available to BLM employees once they are complete.

This guidance is intended to help the BLM manage wilderness effectively at both the local and national levels. Information about how actions affect wilderness character should help guide managers in their day-to-day wilderness stewardship. Documentation of trends in wilderness character will help the BLM determine how well it is fulfilling the congressional mandate to "preserve wilderness character."

The outline on the next page describes the measures the BLM will use to assess change in each indicator. The indicators will be used to answer questions that have been asked in order to determine the trends in each quality of wilderness character. The outline follows this structure:

Quality of Wilderness Character

Monitoring Questions for which answers are necessary to assess changes in each Quality

Indicators used to answer the Monitoring Questions

Measures applied to each Indicator

Measures that will be tracked by data generated at the state or national level (i.e., gathering of that data is not a field office responsibility) are indicated by the symbol ●

The descriptions of specific techniques used to gather data for each measure start on page 7.

WILDERNESS CHARACTER

Untrammeled

What are the trends in actions that control or manipulate the "earth and its community of life" inside wilderness?

Actions authorized by the Federal land manager that manipulate the biophysical environment

1-1. Number of authorized actions and persistent structures designed to manipulate plants, animals, pathogens, soil, water, or fire

1-2. Percent of natural fire starts that are manipulated within the boundaries of the wilderness

Actions not authorized by the Federal land manager that manipulate the biophysical environment

1-3. Number of unauthorized actions by agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire

Natural

What are the trends in terrestrial, aquatic, and atmospheric natural resources inside wilderness?

Plant and animal species and communities

2-1. Status of native biological communities

2-2. Abundance and distribution of non-indigenous species

2-3. AUMs of livestock use inside wilderness

Physical resources

2-4. Visible air quality, based on average deciview and sum of anthropogenic fine nitrate and sulfate ●

2-5. Ozone air pollution, based on concentration of N100 (episodic) and W126 (chronic) ozone exposure affecting sensitive plants ●

2-6. Acid deposition, based on concentration of sulfur and nitrogen in wet deposition ●

What are the trends in terrestrial, aquatic, and atmospheric natural processes inside wilderness?

Biophysical processes

2-7. Departure from natural fire regimes, averaged over the wilderness ●

Undeveloped

What are the trends in non-recreational development inside wilderness?

Non-recreational structures, installations, and developments

3-1. Index of physical development for authorized or pre-designation structures and developments

Inholdings

3-2. Area and existing or potential impact of inholdings

What are the trends in mechanization inside wilderness?

Use of motor vehicles, motorized equipment, or mechanical transport

3-3. Type and amount of administrative use (but not law enforcement or emergency use) of motor vehicles, motorized equipment, and mechanical transport

3-4. Proportional use of motor vehicles, motorized equipment, and mechanical transport in law enforcement or emergency responses

3-5. Type and amount of use of motor vehicles, motorized equipment, or mechanical transport not authorized by the federal land manager

Solitude or Primitive and Unconfined Recreation

What are the trends in outstanding opportunities for solitude inside wilderness?

Remoteness from sights and sounds of people inside the wilderness

4-1. Amount of visitor use

4-2. Area of wilderness affected, and severity of effect, from travel routes inside the wilderness

Remoteness from occupied and modified areas outside the wilderness

4-3. Area of wilderness affected, and severity of effect, from developments that are near the wilderness

What are the trends in outstanding opportunities for primitive and unconfined recreation inside wilderness?

Facilities that decrease self-reliant recreation

4-4. Type and number of agency-provided recreation facilities

4-5. Type and number of user-created recreation facilities

Management restrictions on visitor behavior

4-6. Type and extent of management restrictions

Unique / Supplemental

What are the trends in cultural resources inside wilderness?

Loss of cultural resources

5-1. Severity of disturbances to cultural resources

What are the trends in species of concern inside wilderness?

Status of plant and animal species of concern

5-2. Index of the status of indigenous species that are listed, or are candidates for listing, as threatened or endangered

The table below summarizes the relationship between wilderness character, its five qualities, the monitoring questions used to tease apart various components of these qualities, the indicators chosen to answer the monitoring questions, and the corresponding measures which are detailed in this document.

	Quality	Question	Indicator	Measure		page
Wilderness Character	**Untrammeled**	Manipulations	Authorized	1-1.	Management actions	7
				1-2.	Fires suppressed	9
			Unauthorized	1-3.	Unauthorized actions	10
	Natural	Natural Resources	Plants & Animals	2-1.	Native biota	11&74
				2-2.	Nonnative species	12
				2-3.	Grazing AUMs	14
			Physical Resources	2-4.	Visibility	15
				2-5.	Ozone	15
				2-6.	Acid deposition	15
		Natural Processes	Biophysical Processes	2-7.	Natural fire regime departure	16
	Undeveloped	Development	Development	3-1.	Physical development	17
			Inholdings	3-2.	Inholdings	21
		Mechanization	Motorized / Mechanical use	3-3.	Authorized use	22
				3-4.	Emergency use	24
				3-5.	Unauthorized use	25
	Outstanding Opportunities	Solitude	Remoteness Inside	4-1.	Visitor use	27
				4-2.	Area affected by inside routes	29
			Remoteness from Outside	4-3.	Area affected by outside developments	30
		Primitive & Unconfined Recreation	Facilities	4-4.	Recreation facilities	32
				4-5.	User-created facilities	34
			Restrictions	4-6.	Visitor restrictions	37
	Unique / Supplemental Values	Cultural Resources	Loss	5-1.	Cultural resource disturbance	39
		TES	Status	5-2.	Species of concern	41

The Measures

UNTRAMMELED

Untrammeled Measure 1-1. *Number of authorized actions and persistent structures designed to manipulate plants, animals, pathogens, soil, water, or fire*

Technique

Each separate action is counted annually. Each persistent structure is counted every year it is in operation.

Definitions

Action: the implementation of an intentional decision to manipulate the biophysical environment. The following general rules apply:

If an action spans multiple locations and the action remains the same, only one action would be reported. For example, treatment of a single invasive plant species in several locations within the wilderness = 1 action.

If a continuous action spans multiple fiscal years and the action remains the same, it will be counted once in each year. E.g.: treatment of a single invasive plant species is initiated in one fiscal year and the action continues into the next fiscal year = 2 actions.

If more than one species is targeted for an action, separate actions are recorded for each species. E.g.: one herbicide treatment is used to reduce populations of two different invasive plants = 2 actions.

If the type of treatment changes, each type would count as a separate action. E.g.: mechanical treatment is added to the use of herbicides = 2 actions; post-fire mechanical rehabilitation of dozer lines plus re-seeding disturbed ground = 2 actions.

Persistent structure: anything built with the intent of altering "the earth and its community of life" (e.g., fish dam, wildlife guzzler, stockpond).

Examples

Spraying herbicide to control populations of invasive plants
Spreading seed to rehabilitate an area that burned
Manipulating wildlife habitat (e.g., existing guzzlers, creating fish barriers)
Removing animals (e.g., predators)
Using management-ignited prescribed fire to reduce accumulated fuels

unique i.d. name or number	type	reason	authorization
Knapweed spray	chem. Control	incr. Natural	EA-CO060-10-001
Big Sage reseed project	seeding	incr. Natural	EA-CO060-09-051
DOW T4W R17E Sec. 25	guzzler		installed mid-1970s -- no EA
DOW T4W R18E Sec. 14	guzzler		installed late-1960s -- no EA
4	← report this value		

Sideboards & Notes

Data are collected annually. Over time, an increase in this value is a decrease in this indicator of wilderness character.

This measure tracks the point of implementation of any action, as well as the persistence of functioning structures (i.e., the decision to install a guzzler counts as one action the year the guzzler is installed, and one action each subsequent year it is functioning).

The focus of this measure is on agency actions that represent larger scale manipulations of populations, communities, and disturbance processes rather than smaller scale, localized manipulations. For example, a broad-scale aerial seeding project would be monitored but the sprinkling of seed for campsite rehabilitation would not; spraying herbicide along a trail would be monitored but pulling a few individual plants would not. This protocol allows local managers to make the determination as to what is important for their wilderness as long as that determination is relatively consistent within each wilderness over time.

Other than the coarse screen in the paragraph immediately above, this measure does not make a subjective judgment of the value of each action (i.e., it does not decide if one action "trammels" more than another). Actions clearly vary in significance; however, it is neither practical nor reasonable to try to apply a value beyond an equal weight to various actions.

As with many other measures, data can be expected to vary greatly from year to year. Regression analysis will be necessary to determine if any trend is present.

Ancillary data

Maintain consistency in describing "type" (e.g., biological control of non-indigenous plants, chemical control of non-indigenous plants, mechanical control of non-indigenous plants, etc.) and "reason" (e.g., improving natural quality, legislative provision that requires action, etc.) for the actions listed. Future iterations of this implementation guide may standardize categories for these inputs.

Untrammeled Measure 1-2. ***Percent of natural fire starts that are manipulated within the boundaries of the wilderness***

Technique

The number of natural ignition fires manipulated by fire managers is divided by the total number of natural fire starts; this fraction is multiplied by 100 and recorded at the nearest whole percent. If there are no natural fire starts, the value reported is 0 (zero).

Definition

Manipulation: Any action taken inside a wilderness boundary to affect fire behavior.

Example

unique i.d. name or number			manipulation
Big Sage Flat			1
Wild Canyon			0
Trailhead Snag			1
3	COUNT	SUM	2
		PERCENT (report this value →)	**67**

Sideboards & Notes

Data are collected annually. Over time, an increase in this value is a decrease in this indicator of wilderness character.

While it is true that manipulating fires that are not natural starts (i.e., human-caused ignitions) also decreases the untrammeled quality, these actions are not tracked here as virtually all of those fires are manipulated and their inclusion might mask changes in fire responses over which the BLM has greater discretion.

This measure tracks the trammeling effects of fire management only within wilderness boundaries. The effects of fires suppressed outside the wilderness which would have burned into a wilderness are tracked in **Measure 2-7**.

This information does not provide the manager with an understanding of the rationale behind fire suppressions. However, the Wildland Fire Implementation Plan does require documentation of this rationale and it is recommended that units track this information locally for improved management decisions at that level.

Untrammeled Measure 1-3. ***Number of unauthorized actions by agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire***

Technique

Each separate action is counted annually.

Definitions

Action: an intentional decision to manipulate the biophysical environment. The same general rules apply as with authorized actions (**Measure 1-1**).

Unauthorized: any action undertaken by anyone, any group, or any agency without specific approval by the authorized line officer. (Any action that manipulates the biophysical wilderness environment requires such approval.)

Examples

Stocking a lake with exotic trout by a "bucket biologist"

Poisoning a lake to kill exotic trout by a "friends" group

Stocking a lake with native trout by a state agency without specific authorization from the BLM

unique i.d. name or number	type	agency/group/person responsible	BLM response
stockpond T17N R35W Sec.3 NWSE	water development	permittee	permittee given 3 months to fill and rehabilitate
1	← report this value		

Sideboards & Notes

Data will be collected annually. Over time, an increase in this value is a decrease in this indicator of wilderness character.

Changes in this value must be interpreted with care. Reported increases (or decreases) in illegal activities might be the result of changes in time and resources dedicated to enforcement, rather than in the actual character of use.

Unlike **Measure 1-1**, this measure tracks only the decision point, not the persistent evidence of the decision. There should be no persistent unauthorized structures in a wilderness.

NATURAL

Natural Measure 2-1. *Status of native biological communities*

Technique

No single technique has been designed for this measure. Two alternatives of varying degrees of complexity are described in **Appendix B**. The staff of each office must choose a methodology to satisfy this measure for each wilderness under their stewardship. One of the two alternatives in Appendix B may be chosen, some other protocol may be proposed for use, or the staff may develop a unique approach to monitoring representative species or communities. Whatever method is chosen by the Field Office staff, it must be approved by the BLM Wilderness Character Monitoring Team.

Sideboards, Notes, & Details

The protocol may change over time as techniques are refined and better data are available. To track changes against a wilderness area's baseline, the Field Office should also continue using its initial methodology until a correlation between new and old techniques can be established.

[See Appendix B]

Natural Measure 2-2. *Abundance and distribution of non-indigenous species*

Technique

Each non-indigenous plant or animal species is scored by the estimated percent of wilderness acreage that is occupied by that species and by the estimated population density where it is found. Values are assigned according to the table below. Scores are multiplied together for each species monitored under this measure, and the resulting products are summed to generate a total score.

Species	**estimated percent** of the wilderness on which it is found	Score		**estimated density** in the areas where found	Score	Total
	Very Low (or Spot) = <1%	1		low = <5% of species	1	
	Low = 1-5%	2				
	Moderate = 5-20%	3		moderate = 5-25%	3	
	High = 20-35%	4				
	Very High = 35-65%	5		high = >25% of species	5	
	Extreme = >65%	6				

Once data are initially collected, periodic review and updates every 5 years should be sufficient to track changes over time, but more frequent monitoring may be appropriate to prioritize management actions.

Definitions

Indigenous: a species which originally inhabited the area now designated as wilderness. In this monitoring protocol, the term nonnative is used interchangeably with non-indigenous.

Example

A wilderness has cheat grass found throughout the area, usually in densities of 10% to 20% of the plants present; thick stands of tamarisk are found in several spots along most of the washes. Total acreage where tamarisk is present is less than 5%, but probably more than 1% of the wilderness. There is a tree-of-heaven at an old homesite, which does not appear to be reproducing.

Species	areal extent score	density score	total	comments
Bromus tectorum	6	3	18	
Tamarix sp.	2	5	10	100% inventory of habitat; not yet in Butler Wash
Ailanthus altissima	1	1	1	only location: old Burt place
			0	
		report this value →	**29**	

Sideboards & Notes

Data will be gathered every five years. Over time, an increase in this value is a decrease in this indicator of wilderness character.

DO NOT INCLUDE wild horses or burros in this measure.

The use of broad categories is a crude measure, but it is unlikely that most wilderness areas have more accurate data on the extent of invasive species. It should be possible to use field experience coupled with professional judgment to assign broad categories. However, initial data collection should be as complete as possible in order to reliably identify trends over time.

This methodology makes no distinction as to the relative threats of the various species present. Such determinations are advisable prior to taking control actions.

It is expected that monitoring will focus on nonnative species that are invasive (nonnative species that are likely to spread or have already spread). A species may be invasive in one locale but not in another, therefore the local ecologist, wildlife biologist, or botanist will need to decide which non-indigenous species are invasive and should be included in this monitoring.

Non-indigenous invasive species can spread into a wilderness from human-caused actions not in the wilderness. An increase in the number of non-indigenous species over time could be caused by actions not under the control of a wilderness manager, but is an impact to naturalness nonetheless.

Ancillary data

The "comments" section should include an indication as to how confident the reporting office is in the classifications and number of species accounted for.

Natural Measure 2-3. *AUMs of livestock use inside wilderness*

Technique

The number of animal unit months (AUMs) of actual livestock grazing in a wilderness is totaled. If more than one allotment exists in the wilderness, add those subtotals together. If an allotment is both inside and outside a wilderness, multiply the allotment's AUMs by the percentage of the allotment inside the wilderness. If the portion of the allotment inside the wilderness is its own separate pasture, count that pasture as if it were a separate allotment.

Example

One thousand acres of a 5,000-acre allotment is within the wilderness; the allotment is permitted for 800 AUM, but only 500 AUM are being used by the permittee. There is a second allotment of 2,450 acres entirely within the wilderness, permitted (and used) at 425 AUM.

allotment or pasture	AUMs used	% w/in Wilderness	score	comments
Table Mesa	500	20	100	800 AUMs permitted; % w/in Wilderness is rough guess
LCFO 27553	425	100	425	
			0	
			0	
			0	
		report this value →	**525**	

Sideboards & Notes

Data will be gathered every year. Over time, an increase in this value is a decrease in this indicator of wilderness character.

As it is expected that the actual AUMs may well be less than the permitted AUMs and will vary from year to year due to environmental or market fluctuations, regression analysis must be used to determine if changes are significant.

The use of livestock as a management technique to control exotic vegetation is NOT tracked here, but is accounted for in **Measure 1-1**.

This measure does not include AUMs dedicated to wildlife or wild horses and burros

Ancillary data

Many allotments—or even pastures—may cross wilderness boundaries, making interpolation of data necessary. "Comments" section should include description of how such interpolations were derived, to ensure consistency over time.

Natural Measure 2-4. ***Visible air quality, based on average deciview and sum of anthropogenic fine nitrate and sulfate***

Natural Measure 2-5. ***Ozone air pollution, based on concentration of N100 (episodic) and W126 (chronic) ozone exposure affecting sensitive plants***

Natural Measure 2-6. ***Acid deposition, based on concentration of sulfur and nitrogen in wet deposition***

Technique

The values for these three measures will be gathered nationally for all four wilderness-managing agencies. Extrapolations will address spatial gaps. Details of reporting are unclear at this time.

Sideboards & Notes

Depending upon the distance from a wilderness to the monitoring stations used for each of these measures, data significance will be variable. More refined data methods are unavailable at this time.

It is expected that all concerned parties will realize changes in these values are almost entirely outside the purview of the wilderness manager. Nevertheless, changes in air quality are important to track over time as indicative of an essential component of wilderness character.

Natural Measure 2-7. ***Departure from natural fire regimes averaged over the wilderness***

[Reserved.]

UNDEVELOPED

Undeveloped Measure 3-1. *Index of physical development for authorized or pre-designation structures and developments*

Technique

An index of physical development within the wilderness is derived from the sum of the development levels of various types of infrastructure. This index attempts to capture varying degrees of impacts from different types of structures.

For each **building**, if the building type is:	Assign that building the value:
Non-residential: buildings that do not house people, such as toilets and storage sheds, or structures that were intended to house people but can no longer fulfill that purpose AND are not eligible for the National Register of Historic Places.	2
Part-time (seasonal) residential: buildings that are occupied by people for a cumulative total of 6 months or less each year. This may include some lookouts, as well as certain recreation shelters, including buildings that only receive day use.	5
Full-time (year-round) residential: for buildings that are occupied by people for a cumulative total of more than 6 months each year. This may include crew quarters, outfitter and guide lodges, and certain recreational cabins, including buildings that only receive day use.	10
For each **Fence Line segment**, if the fence is:	Assign that segment its miles (to nearest tenth) in length multiplied by the value:
Primitive: constructed of native materials or native materials and wire	1
Non-primitive: constructed predominantly of nonnative materials (metal or treated wood posts)	2
For each **dam**, if the dam type is:	Assign that dam the value:
Below National Inventory of Dams (NID) criteria: dams (including stock ponds) less than 6 feet high or a maximum storage less than 15 acre-feet.	3
Meeting NID criteria & constructed of native materials: dams (including stock ponds) greater than 6 feet high or a maximum storage greater than 15 acre-feet that are constructed with native materials (e.g. earthen dams).	5
Meeting NID criteria & constructed of nonnative materials: dams with a height greater than 6 feet and a maximum storage greater than 15 acre-feet that are constructed with nonnative materials (e.g., concrete).	10
For each **ROW, permit, easement,** or **authorization** for a linear feature:	Assign that segment its miles (to nearest tenth) in length multiplied by the value:
Impassable to vehicles.	1
Suitable and maintained for high-clearance vehicles.	5
Suitable and maintained for passenger vehicles.	10
For each piece of **non-linear infrastructure** or **site**:	Assign each piece of infrastructure the value:
Any small-scale installation or other structure (e.g., a repeater, windmill, stock trough, guzzler, old dump, plane crash, UXO).	2

Count each piece of infrastructure separately (e.g., a windmill and associated stock trough are two pieces of infrastructure).	
For each **mine**, if the mine is:	Assign that mine the value:
Reclaimed and restored	0
Small, inactive: mines whose disturbed area is less than or equal to 1 acre and that are no longer actively being worked, including abandoned historical mines that are still apparent.	2
Small, active: mines whose disturbed area is less than or equal to 1 acre and that are currently under development.	10
Large, inactive: mines whose disturbed area is greater than 1 acre and that are no longer actively being worked, including abandoned historical mines that are still apparent.	acreage of disturbance (to the nearest acre) * 2
Large, active: mines whose disturbed area is greater than 1 acre and that are currently under development.	acreage of disturbance (to the nearest acre) * 10

Definitions

Building: a structure designed to support, shelter, or enclose persons, animals, or property of any kind.

Dam: any artificial barrier which impounds or diverts water, including stock ponds.

NID dam: a dam is included in the National Inventory of Dams if: (a) it is a high- or significant-hazard potential class dam, *or* (b) it is a low hazard potential class dam that exceeds 25 feet in height AND 15 acre-feet storage, *or* (c) it is a low hazard potential class dam that exceeds 50 acre-feet storage AND 6 feet in height.

ROW, Permit, Easement, or Authorization: any granted use, including for vehicle travel and structures such as water pipelines and telephone lines. This does NOT include cherry-stem routes, which are tracked in **Measure 4-3**.

Non-linear infrastructure: installations or structures used to support activities such as telecommunications, water development, livestock grazing, or wildlife management. It includes debris such as old dump sites, plane crash sites, or locations of unexploded ordinance. It includes memorials or other monuments other than those placed during land surveys. It also includes unattended measurement device left in place for at least one year for the purpose of recording environmental data, such as meteorology or seismic activity. It does not include recreation infrastructure (accounted for in **Measure 4-4**). Infrastructure placed for temporary use (less than one year, e.g., a repeater that is installed to support fire management activities for a specific incident) is not included, nor are mobile installations such as radio collars.

Example

(see next page)

reference map:	Dry Mtn Wilderness devel. 8/2010		
Buildings	value		score
Bald Mtn. lookout	5		5
			0
			0
Fences	value	length (nearest .1 mile)	score
Alamo Mesa allotment fence	2	3.7	7.4
Ojo Alamo spring fence	1	0.1	0.1
			0
Dams	value		score
none			0
			0
			0
ROWs (etc.)	value	length (nearest .1 mile)	score
none			0
			0
			0
Non-linear infrastructure or site	value		score
Bisti dump	2		2
3 guzzlers	6		6
			0
Mines	value	size (nearest acre)	score
Lost Man Adit	2	1	2
			0
			0
		report this value →	**22.5**

Sideboards & Notes

Data will be gathered every five years. Over time, an increase in this value is a decrease in this indicator of wilderness character.

This index number has no meaning in an absolute sense. An index value of 432 should not be interpreted as having twice the development level of a wilderness with a development level of 216. However, the use of this index is useful in a relative sense for showing increasing or decreasing trends over time at any one wilderness.

The relative values assigned to each development type and to the level of development within each type are highly subjective, and may not reflect the actual relative impact of these developments in any one wilderness.

This measure does not track properties eligible for the National Register of Historic Places. Particularly important cultural properties are tracked in **Measure 5-1**.

Developments primarily made for recreational purposes (e.g., trails, footbridges, campsites, etc.) are tracked under the Solitude or Primitive and Unconfined Recreation quality in **Measure 4-4**.

In most cases, individual adits and shafts are grouped together into a mining area for determining what is monitored as a "mine." Do not, however, group mining activity based on claim ownership. Mining disturbance groupings should be those that are in close proximity without large undisturbed areas in-between.

Ancillary data

It is critical that an adequate base map of these developments be referenced so that changes over time can be reliably determined. Future data input could be arranged so the six

individual components of the index could be tracked separately to assess trends in various types of development.

Undeveloped Measure 3-2. ***Area and existing or potential impact of inholdings***

Technique

The index of inholdings is calculated by multiplying the acres of each inholding by the value of its development potential from the table below, and summing all the resultant quantities.

For each **inholding**, if its development potential is:	Multiply its acres by:
Low – the inholding is owned by an entity that has shown interest in sale or exchange of its land to the BLM; or is party to a legal document (e.g., a conservation easement) that specifically commits the owner to manage the property in a manner compatible with wilderness designation.	1
Unknown – the inholding owner has expressed no desire to sell, exchange, or develop the inholding, or has indicated a preference for development but the agency believes it infeasible.	2
High – the inholding owner has shown interest in developing the property. Development is considered feasible by the agency.	3
Developed – the inholding owner has developed the inholding.	5

Definitions

Inholding: non-federal land within the boundary of a wilderness. It does NOT include cherry-stemmed parcels or external edgeholdings that may be acquired. (It DOES include non-federal land at the edge of the wilderness if the wilderness boundary includes that parcel.)

Example

A wilderness includes one State section that the state is interested in exchanging, and an 80-acre parcel held by a wealthy developer who plans to build a fly-in resort.

Inholding location	Acres	Development rating	score
T3N R7E Sec. 16	640	1	640
T3N R7E Sec. 12 N/2NE	80	3	240
			0
			0
		report this value →	**880**

Sideboards & Notes

Data will be gathered every five years. Over time, an increase in this value is a decrease in this indicator of wilderness character.

Determining the feasibility of development can be problematic. It is better to rate the threat high and lower it as more favorable conditions are confirmed.

This measure does not explicitly include ROWs (part of **Measure 3-1**), though it assumes their status would be evaluated in determining the feasibility of development.

This measure does not include development on adjacent lands (part of **Measure 4-3**).

Undeveloped Measure 3-3. ***Type and amount of administrative use (but not law enforcement or emergency use) of motor vehicles, motorized equipment, and mechanical transport***

Technique

This measure is the sum of the number of motor vehicles, pieces of motorized equipment, and mechanical transport authorized multiplied by the number of days authorized for each piece of equipment. Motor vehicles are weighted twice as much as mechanical transport so that, for instance, an increase in this measure of the Undeveloped quality of wilderness character is gained if a horse-drawn wagon replaces an ATV.

Definitions

Motor vehicles: Machines used to transport people or material across or over land, water, or air, and which are powered by the use of a motor, engine, or other nonliving power source. This includes, but is not limited to motor boats, ATVs, snowmobiles and aircraft that either land or drop off or pick up people or material (i.e., not aircraft that merely fly over the wilderness).

Motorized equipment: Machines that are not used for transportation but are powered by a motor, engine, or other nonliving source. This includes, but is not limited to, machines such as chain saws and generators. It does not include small hand-carried devices such as shavers, wristwatches, flashlights, cameras, stoves, or other similar small equipment.

Mechanical transport: Any contrivance for moving people or material in or over land, water, or air, having moving parts, that provides a mechanical advantage to the user, and that is powered by a living or non-motorized power source. This includes, but is not limited to, sailboats, hang gliders, parachutes, bicycles, game carriers, carts, and wagons. It does not include wheelchairs when used as necessary medical appliances. It also does not include skis, snowshoes, rafts, canoes, sleds, travois, or similar primitive devices without moving parts.

Example

First action: two helicopters authorized for five days each. Second action: one horse-drawn fresno plow authorized for two days and a chainsaw authorized for ten days. Both actions were analyzed through a minimum requirements analysis by using the Minimum Requirement Decision Guide.

Action or Project	# motor vehicles	days per motor vehicle	# non-motor mech. trans.	days per mech. trans.	# motor equip.	days per motor equip.	score	MRA?	agency
wolverine transplant	2	5					20	FDO 19	DOW
stockpond rehab			1	2	1	10	12	FDO 31	BLM
						report this value →	**32**		

Sideboards & Notes

Data will be gathered annually. Over time, an increase in this value is a decrease in this indicator of wilderness character.

This measure tracks what is *authorized* for use; this might be different than actual use.

This measure does not track the use of motorized equipment or mechanical transport by law enforcement or in emergencies (**Measure 3-4**), nor unauthorized use (either illegal uses or uses in excess of that which is authorized; both are tracked under **Measure 3-**

5). Depending on the availability of data for each wilderness, BLM staff may or may not track the use of motorized equipment or mechanical transport where such use is legal without requiring BLM authorization (e.g., Border Patrol operations). Data sources and assumptions should be consistent over time at any one wilderness, and noted in ancillary data.

Ancillary data

Data fields should include: reference to the authorizing minimum requirements analysis as well as the agency authorized to use the equipment. Future data may include actual use, if different from authorized use.

Undeveloped Measure 3-4. ***Proportional use of motor vehicles, motorized equipment, and mechanical transport in law enforcement or emergency responses***

Technique

This measure is the sum of the number of motor vehicles, pieces of motorized equipment, and mechanical transport used to respond to each law enforcement incident or emergency (motor vehicles are weighted twice as much as mechanical transport) divided by the total number of emergencies (i.e., including those where no motorized equipment or mechanical transport were used). For the purpose of this protocol, each day of one incident is counted separately.

Definitions

Law enforcement: Here taken to mean actions by a BLM ranger or other law enforcement official (e.g., county sheriff, Border Patrol) for which approval for the use of motorized equipment is not required in advance (e.g., "hot pursuit.")

Emergency: An event that presents an imminent threat to human health and safety, or other event that causes another threat as may be addressed by law, regulation, or policy (e.g., the Congressional Grazing Guidelines). For this measure only, this does NOT include fire emergencies.

Motor vehicles, motorized equipment and **Mechanical transport**: same as in **Measure 3-3**. Search aircraft that do not land are not counted; aircraft that drop or pick up supplies or searchers are counted.

Example

A wilderness has five emergencies in a year. On each of two occasions, a helicopter was called in to pick up injuries; on one occasion, four snowmobiles were dispatched into the wilderness for two days to search for a missing skier who was later found in the local bar; once an injured person was carried out on a wheeled litter; and once an injured person was carried out on horseback.

LE Action or Emergency	# motor vehicles	days per motor vehicle	# non-motor mech. trans.	days per mech. trans.	# motor equip.	days per motor equip.	score	
ankle 2/27	1	1					2	
chest pains 3/1	1	1					2	
skier fiasco 3/8-9	4	2					16	prohib. uses per emergency **report this value ↓**
ankle 6/23			1	1			1	
knee 8/3 (horse)							0	
5 COUNT						SUM	21	**4.2**

Sideboards & Notes

Data will be gathered annually. Over time, an increase in this value is a decrease in this indicator of wilderness character.

By counting motorized equipment used to transport people or material as both motorized equipment and mechanical transport, an increase in the Undeveloped quality of wilderness character is gained if rescuers started using a wheeled litter instead of an ATV.

Ancillary data

"Emergency" column should include the agency using the equipment if that is not obvious from the nature of law enforcement action or emergency.

Undeveloped Measure 3-5. ***Type and amount of use of motor vehicles, motorized equipment, and mechanical transport not authorized by the federal land manager***

Technique

The use of unauthorized equipment by each of the following categories of users is assigned a score, depending on its frequency of use multiplied by its areal extent. The scores of each type of user are summed to generate a total score reported for this measure.

Category	Frequency of unauthorized use	Score	Extent of unauthorized use	Score	Total
Public	once or twice per year	1	one or two locations	1	
	3x/year to 1x/month	2	three to five locations	2	
	more than 1x/month	3	six or more locations	3	
Permittees	once or twice per year	1	one or two locations	1	
	3x/year to 1x/month	3	three to five locations	2	
	more than 1x/month	5	six or more locations	3	
Agencies	once or twice per year	1	one or two locations	1	
	3x/year to 1x/month	3	three to five locations	2	
	more than 1x/month	5	six or more locations	3	
				GRAND TOTAL	

Definitions

Motor Vehicles, Motorized Equipment and **Mechanical Transport:** same as in **Measure 3-3**, except there is no double-weight of **Motor Vehicles**.

Public: members of the general public. The use of motor vehicles, motorized equipment, or mechanical transport by this group is never authorized. Typical prohibited equipment includes OHVs, mountain bikes, and game carts.

Permittees: people or organizations with a permit from the BLM to operate on public land, whether within or outside the wilderness (e.g., livestock operators, special recreation permit holders). The use of motor vehicles, motorized equipment, or mechanical transport by some members of this group may be authorized. This measure tracks the use in excess of that which is authorized.

Agencies: any governmental body or individual employed by that body engaged in official business. This includes members from all levels of government as well as BLM staff whose use of this equipment is not authorized. The use of motor vehicles, motorized equipment, or mechanical transport by this group is frequently authorized, but the authorization must be explicit and in conformance with the applicable wilderness laws.

Frequency of use: the ranges described above (in the darkly-shaded cells) can be changed for any one wilderness if the conditions at the time of designation are such that the range described above is not useful. For instance, a wilderness with an extensive history of OHV intrusions by the public could use the categories in the example below, or any other three-part division that will allow for adequate opportunities to track improvement or degradation over time. Whatever scale is used, it is essential that each area's wilderness character monitoring file include the scale used at the time of gathering the baseline data, and that this scale be used for future monitoring.

Category	Frequency of unauthorized use	Score	Extent of unauthorized use	Score	Total
Public	more than 1x/ month	1	one or two locations	1	
	1x/month to 1x/week	2	three to five locations	2	
	more than 1x/week	3	six or more locations	3	
Permittees	once or twice per year	1	one or two locations	1	

	3x/year to 1x/month	3	three to five locations	2	
	more than 1x/month	5	six or more locations	3	
Agencies	once or twice per year	1	one or two locations	1	
	3x/year to 1x/month	3	three to five locations	2	
	more than 1x/month	5	six or more locations	3	
				GRAND TOTAL	

Example

A wilderness has- frequent OHV intrusions along most of its boundary; at the end of his season of use, one of the livestock permittees occasionally drives in to a lookout point to search for cattle; there is no unauthorized agency use of motor vehicles, motorized equipment, or mechanical transport.

Category	frequency score	extent score	total	comments
Public	3	3	9	ongoing boundary violations
Permittees	1	1	1	ATV to overlook; range con will contact
Agencies	0		0	
	report this value →		**10**	

Sideboards & Notes

Data will be gathered annually. Over time, an increase in this value is a decrease in this indicator of wilderness character.

See important notes on the development of alternative frequency-of-use ranges (the darkly-shaded cells) as detailed in the "Definitions" section above.

Due to the nature of these violations, it is unlikely that land managers could be more precise than the categories of frequency used here.

The frequency scores are weighted to reflect the belief that violations by permittees or agency personnel are more akin to an authorized use and (theoretically, at least) more feasible for the managing agency to control. Weighting gives a greater incentive to do so.

It must be recognized that it may be difficult to assign a user category for a particular unauthorized use. Field staff experience and best judgment must be used.

Changes in this value must be interpreted with care. Reported increases (or decreases) in illegal activities might be the result of changes in time and resources dedicated to enforcement, rather than in the actual character of use.

SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

Recreation Measure 4-1. *Amount of visitor use*

Technique

Various. Wildernesses need to develop a reliable, valid system for measuring use. Examples include:

- trailhead car counts (which might then be adjusted for the average number of people per vehicle)
- trail counters (which might then be converted to groups by adjusting for average party size)
- permit systems and trailhead registrations (with checks for compliance)

To reduce cost of collecting data, these data should be gathered during the primary use season. It might be preferable for highly-used wilderness areas to track use during both the primary and secondary seasons, to address the point brought up in the sideboard/notes below.

Definitions

Primary use season: generally, that portion of the year during which 80% of the use occurs. It is less important that the time span capture exactly this amount of use than that the period be clearly defined so that monitoring can be done consistently over time.

Example

Number	comments
1167	Trailhead car count; monitoring design in "Big Wash Visitor Use Plan"

Sideboards & Notes

Data will be gathered annually. Over time, an increase in this value is a decrease in this indicator of wilderness character.

The possibility of differing monitoring techniques for this measure creates an unknown degree of error in compiling the data from multiple wildernesses.

Many wildernesses have not tracked this measure in the past, and the technique chosen under such circumstances might be rather coarse. Use the best information available. This is NOT necessarily the data supplied to the BLM's Recreation Management Information System (RMIS). (For example, trailhead car counts may provide a sufficient technique to determine this measure, rather than trying to guess how many people who entered the wilderness).

Wilderness visitation can be highly variable year-to-year, depending on various factors such as the cost of gasoline, wildflower displays, fire activity, and media advertising. While annual data is ideal, it is necessary to "smooth" data over multiple years to draw firm conclusions about trends in visitation.

The measure does not capture the geographic variation in use within a wilderness. It is important for the local manager to know whether the increase in use is occurring at one or two places, or across all wilderness destinations.

The measure does not capture use during the off-peak times of year, and changes there may signal a greater change in opportunities for solitude in locations where visitation during the primary use season is already high.

At the wilderness level, it is strongly recommended that managers track data individually by trailhead or portal. Use typically is uneven across wildernesses, and long-term data show that increases at one trailhead may not correspond to changes at nearby trailheads.

Ancillary Data

The "comments" field should include data collection method (e.g., permit, visitor register, traffic counter, ranger contacts; etc.), area monitored (i.e., all trails or selected trails), or reference other monitoring design .

Recreation Measure 4-2. ***Area of wilderness affected, and severity of effect, from travel routes inside the wilderness***

Technique

GIS analysis will be used to compute the number of acres inside the wilderness that are less than: ¼-mile from any system trail; 1-mile from any ROW or other authorization for which motorized use is permitted.

Cherry-stemmed routes are not counted here, but are analyzed in **Measure 4-3**.

The acres are summed in two different manners to yield two values for this measure (see example graphics at the bottom of this page):

1) "Area Affected": If measures overlap (e.g., two diverging trails), count the overlapping area only once in deriving this value.

2) "Severity": Irrespective of overlap, all area measures will be added to derive this value. (For example, in the example of two diverging trails, count the overlapping area twice – once for each trail.)

Definitions

System trail: a linear feature constructed or delineated by the BLM for the purpose of allowing the free movement of people or stock. Non-system trails ("user-developed" or "social" trails) are not included.

Example

Area	Severity	reference
672	**1566**	map: "Little Flat Wilderness - WCM.4-2 - 2010

Sideboards & Notes

Data will be gathered every five years. Over time, an increase in this value is a decrease in this indicator of wilderness character.

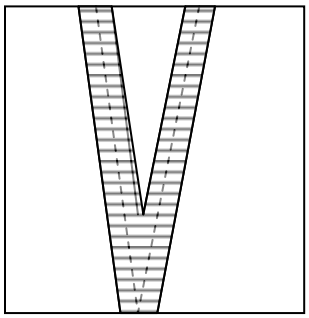
Remoteness also is affected by user-created trails, which encourage use of off-trail areas; user-created trails are tracked in **Measure 4-5**.

Changes in the "severity" value track improvements in this indicator of wilderness character when developments are removed that are within the impact zone of a greater development (e..g., part of a tightly-packed trail system is closed and rehabilitated).

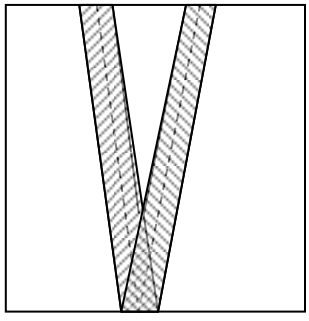
Changes in the "area affected" measure track impacts to the "core" area of solitude (e.g., the trail in the tightly-packed area is closed, but a new trail is constructed in a previously undeveloped portion of the wilderness).

Ancillary Data

"Reference" should include a map file or other description of which travel routes are included in the database. This is an important check on data completeness.



"Area" =



"Severity" = +

Recreation Measure 4-3. A*rea of wilderness affected, and severity of effect, from developments that are near the wilderness*

Technique

GIS analysis will be used to compute the number of acres that are less than:

a) 1 mile from any unpaved road outside the wilderness, unpaved cherry-stem, any shoreline accessible by motorboats, or residential development;

b) 2 miles from any paved road outside the wilderness or paved cherry-stem;

c) 5 miles from any OHV play areas; 4-lane (or more) divided highway; active railroad tracks; private or non-commercial aircraft landing site; the closest edge of any industrial development; and

d) 10 miles from any commercial or military airstrip.

Trails open to motorized use outside the wilderness are considered unpaved roads.

The acres are summed in two different manners to yield two values for this measure:

1) "Area Affected": If measures overlap (e.g., an unpaved boundary road and a 4-lane divided highway 3 miles from the boundary), only the measure with the impact further into the wilderness will be counted to derive this value.

2) "Severity": Irrespective of overlap, all measures will be added to derive this value.

Definitions

Residential development: at least one dwelling occupied a total of at least two months per year. Measure from the actual structure, not the edge of the private property.

Industrial development: any commercial use for which motors are commonly present (e.g., gravel pits, oil wells, power plants, factories) or visual impacts are noticeably unnatural (e.g., solar panel array). Measure from the nearest points of actual development (e.g., the actual well pad, rather than the edge of the lease).

Example

Area	Severity	reference
4877	**5693**	map: "Little Flat Wilderness - WCM.4-3 - 2010

Sideboards & Notes

Data will be gathered every five years. Over time, an increase in either of these values is a decrease in this indicator of wilderness character. If the "area affected" acres increase while the "severity" acres decrease, this is a decrease in this indicator of wilderness character.

This measure does not try to monitor the influence from aircraft overflights, a major impact to perception of remoteness, due to a lack of feasible monitoring. It may be possible to include impacts from military overflight routes at some point in the future of this monitoring protocol.

It is conceivable that the analysis might result in a number greater than the acreage of the wilderness (e.g., a wilderness 6 miles wide with a private aircraft landing site on one side and a paved road on the other). Report that number for future reference of improvement or further degradation.

Changes in the "severity" value tracks improvements in this indicator of wilderness character when developments are removed that are within the impact zone of a greater development (e..g., a dirt two-track paralleling a wilderness boundary is closed and rehabilitated; 1 mile from the boundary is a 4-lane, divided highway).

Changes in the "area affected" measure tracks impacts to the "core" area of solitude (e.g., the dirt two-track is closed, but a solar array is installed 4.5miles from the other side (previously undeveloped) of the wilderness).

Ancillary Data

"Reference" should include a map file or other description of which specific development impacts are included in the database. This is an important check on data completeness.

Recreation Measure 4-4. *Type and number of agency-provided recreation facilities*

Technique

A value of agency-provided recreation facilities is derived from the sum of the development levels of various types of infrastructure. This attempts to capture varying degrees of impacts to the opportunity for self-reliant, primitive recreation from different facilities.

For each **SYSTEM TRAIL SEGMENT**, if:	Assign that segment its miles (to nearest tenth) in length multiplied by the value:		For each trail segment, if the **TRAIL MARKERS** or **SIGNS** are:	Multiply the Trail Segment value generated to the left by the value:	**Total value for one segment**
Single-track	1		None (trail segment is unmarked)	1	
Double track (e.g., old wagon route)	2		Blazes or stone cairns; no signs	2	
			Blazes or stone cairns; signs	3	
Former road: (i.e., retains evidence of past construction)	3		Trail markers of nonnative materials	5	

For each **MAJOR TRAIL FEATURE**, if the feature construction is:	Assign that feature the value:
Primitive: built with raw, native materials, e.g., log bridge; notched log ladder.	1
Constructed with native materials: built with native materials that have been processed to form dimensional materials, e.g. a log stringer bridge with decking; wooden ladder.	3
Constructed with nonnative materials: for major trail features built using nonnative materials as a primary building component, e.g. a bridge using steel supports; metal ladder.	5
For each **CAMPSITE DEVELOPMENT**, if it is:	Assign that site (for each pad or shelter) the value:
Constructed tent pads: camping area has at least cleared and leveled areas for pitching tents, with or without rock or log boarders	2
Shelters: camping areas with roofed structures, with or without walls	10
For each **AMENITY**, if it is:	Assign that amenity the value:
Developed water source	20
Toilet, primitive	5
Toilet, non-primitive (i.e., walled)	20
Permanent fire grate (metal, concrete, or cemented stone)	5
Food storage structure (e.g., bear box, rodent pole)	5
Hitching post, permanent highline	5
Corral	10
Picnic table or bench	20

The final value of **Type and Number of Recreation Facilities** is calculated as follows:

(Sum of (each SYSTEM TRAIL SEGMENT * its TRAIL MARKER or SIGN value)) +
(Sum of MAJOR TRAIL FEATURE assigned values) +
(Sum of CAMPSITE DEVELOPMENT assigned values) +
(Sum of AMENITY assigned values) =
Value of Recreation Facilities (Measure 4-4)

Example

Big Mesa Wilderness has one old two-track that is 2.1 miles long; at Mile 2, a steep and rocky trail branches off with a plastic post and sign that says "Trail to Bald Point." This trail is 1.7 miles long, and has cairns to mark the trail as it nears the top. The only other "amenities" in the wilderness are: a hitching post at the trail junction, and a bench (an Eagle Scout project) at Bald Point.

reference map:	Big Mesa Wilderness - rec devel: 8/2010				
Trail segment	length (nearest .1 mile)	devel. score	signs score	total	comments
old wagon road: start to junction	2.0	2	1	4.0	
old wagon road: junction to end	0.1	2	1	0.2	
Bald Point Trail	1.7	1	5	8.5	
Major trail feature		value	number	total	
none				0	
Campsite development		value	number	total	
none				0	
Amenity		value	number	total	
junction hitching post		5	1	5	
Bald Point bench		20	1	20	remove
		report this value →		**37.7**	

Sideboards & Notes

Data will be gathered every five years. Over time, an increase in this value is a decrease in this indicator of wilderness character.

In assigning Trail Marker values, do not count trailhead (wilderness portal) signs; for any segment having signs at only one end of the segment, count the higher level of development for the entire segment.

When counting major trail features, the intent is not to count minor constructed elements that may be quite numerous – e.g., water bars, cribbing, or a flight of three or fewer steps.

Although different facilities have different influences on the feeling of primitiveness, the attempt of this protocol to weight them accordingly is subjective.

Other developments unrelated to the immediate recreation experience (such as scientific installations, dams) are monitored under **Measure 3-1**.

Where visitor-caused degradation of system trails exist, except for normal trail maintenance issues, count those areas here and under **Measure 4-5.** For example, on a designated trail where visitors have created a bypass or significant trail braiding, the system trail is counted here and the degradation is counted as a User-Degraded Trail Segment. Do not count minor trails issues, such as a bypass of a tree fallen across the trail.

Ancillary Data

Additional ancillary data should include a map file or other description of which specific developments are included in the database. This is an important check on data completeness.

Recreation Measure 4-5. ***Type and number of user-created recreation facilities***

Technique

A value of user-created recreation facilities is derived from the sum of the development levels of various types of infrastructure, as similar in **Measure 4-4.**

For each **USER-CREATED TRAIL SEGMENT**, if:	Assign that segment its miles (to nearest tenth) in length multiplied by the value:		For each trail segment, if the **USER-CREATED TRAIL MARKERS** or **SIGNS** are:	Multiply the Trail Segment value generated to the left by the value:	**Total value for one segment**
Single-track	1		None (trail segment is unmarked)	1	
Double track (e.g., old wagon route)	2		Stone cairns	5	
Former road: (i.e., retains evidence of past construction)	3		Blazes or trail markers other than cairns	20	
For each **USER-DEGRADED TRAIL SEGMENT**				Count the segment length in miles (to the nearest tenth)	

For each **USER-CREATED MAJOR TRAIL FEATURE**, if the feature construction is:	Assign that feature the value:
Primitive: built with raw, native materials, e.g., log bridge, notched log ladder.	5
Constructed with native materials: built with native materials that have been processed to form dimensional materials, e.g. a log stringer bridge with decking, wooden ladder.	10
Constructed with nonnative materials: for major trail features built using nonnative materials as a primary building component, e.g. a bridge using steel supports, metal ladder.	20
For each **USER-DEVELOPED CAMPSITE**, if it is:	Assign that site the value:
Minimal change to vegetation or soil and no evidence of cut trees or shrubs, but evidence of camping (normally evidenced by rock fire ring, but also could be an open level area clearly identifiable as a camping site by other evidence)	1
Obvious impact to or clearing of perennial vegetation; or well used or large campfire ring; or fewer than four cut trees or shrubs cut; or, mineral soil exposed, but not highly compacted.	2
Highly used campsite having caused impact to vegetation and soil: size sufficient to accommodate more than two tents; or unusually large campfire ring or multiple campfire rings; or downed fuelwood sparse due to collection or may have more than four cut trees or shrubs; or, mineral soil exposed and highly compacted.	3
For each **USER-DEVELOPED CAMPSITE,** if it is within 50 feet of another campsite:	multiply **each** campsite score by 2.
For each **USER-DEVELOPED AMENITY**, if it is:	Assign that amenity the value:
Toilet, primitive	10
Permanent fire grate (metal, concrete, or cemented stone)	20
Food storage structure (e.g., bear box, rodent pole)	10
Highline (additional effects also tracked below)	1
Hitching post, corral, picnic table, bench, lean-to, or other "woodcraft"	10
For each **NON STRUCTURAL USER-DEVELOPED RECREATION SITE**, if it is:	
An area with observable impact to or elimination of perennial vegetation to an area less than 25 sq ft.	1
An area with obvious impact to or elimination of perennial vegetation to an area	3

greater than 25 sq ft but less than 100 sq ft; or fewer than 4 cut trees or shrubs.	
An area with obvious impact to or elimination of perennial vegetation greater than 100 sq ft; or 4 or more cut trees/shrubs; or mineral soil exposed and highly compacted; or areas that are impacted by human waste where sight or smell is at level to cause offense to an average visitor.	5
The final value of **Type and Number of Recreation Facilities** is calculated as follows: (Sum of (each USER-CREATED TRAIL SEGMENT * its TRAIL MARKER or SIGN value)) + (Sum of USER-DEGRADED TRAIL SEGMENT assigned values) + (Sum of USER-DEVELOPED MAJOR TRAIL FEATURE assigned values) + (Sum of USER-DEVELOPED CAMPSITE DEVELOPMENT assigned values) + (Sum of USER-DEVELOPED AMENITY assigned values) + (Sum of NON-STRUCTURAL USER-DEVELOPED RECREATION SITE assigned values) = **Value of User-Created Facilities (Measure 4-5)**	

Definitions

User-Created Trail Segment: a linear feature sufficiently present on the ground so as to be followed for recreational travel (e.g. hiking, horseback), but which is not designated as a trail by the BLM, nor appears on any BLM map of the wilderness. This includes trails worn in by visitor use and vehicle routes present before designation which are now closed to all motor vehicles but which have not rehabilitated (either through management activity or natural processes). This does not include routes of travel that are not worn through vegetation (e.g. a wash that is regularly hiked), or animal trails which clearly are not in regular use by visitors. Where motor vehicles are allowed or are expected to be allowed through a ROW, Permit, Easement, or Authorization, record under **Measure 3-1**. Agency-designated trails are tracked under **Measure 4-4**.

User-Degraded Trail Segment: a section of either a System Trail or a User-Created Trail where resource degradation is present (trail braiding, trail widening, trail impacts to sensitive resources, or similar effects).

User-Developed Campsite: normally evidenced by a rock fire ring or presence of charcoal, but also could be an open level area clearly identifiable as a camping site by evidence of nails in trees, litter, cached gear, or arranged sitting rocks or logs. Areas where camping has occurred (for example, a tent is observed) but where no lasting evidence of the site remains when the visitor leaves (for example, an area in a wash) should not be counted as a campsite.

Non-Structural User-Developed Recreation Site: evidence from activities including rock climbing, visiting scenic locations, rapid scouting, fishing, visiting hot springs, etc. normally evidenced by impact to or elimination of perennial vegetation, exposed mineral soil, and other indicators of frequent visitor use which are not immediately within a campsite as defined above.

Example

(see next page)

reference map:	"Big Cottonwood - WCM 4-4&5 - 2010"				
User-created trail segment	length (nearest .1 mile)	devel. score	signs score	total	comments
spur trail to Ojo Alamo	0.6	1	1	0.6	
User-degraded trail segment	length (nearest .1 mile)			total	
braided trail across Big Flat	0.1			0.2	plan to repair in FY11
User-developed major trail feature		value	number	total	
none				0	
User-developed campsite		value	number	total	
Ojo Alamo (2 high-use sites)		6	2	12	
User-developed amenity		value	number	total	
Ojo Alamo hunting blind		10	1	10	remove on next patrol (9/2010)
User-developed rec site (non-camping)		value	number	total	
Alamo Rock "bouldering" area		5	1	5	
		report this value →		**27.8**	

Sideboards & Notes

Over time, an increase in this value is a decrease in this indicator of wilderness character.

There is an indistinct line between an agency-provided trail and a trail that is user-created but not rehabilitated by the agency with the expectation that the route will be used for recreation.

Complete campsite inventories along designated trails and at known visitor destination locations. Inventoried areas should be mapped for future monitoring to establish trend. Except in rare instances, a complete inventory of the remote, infrequently visited areas of an entire wilderness is not necessary.

A campsite and an associated nearby problem area with human waste is counted as both a campsite and a non-structural recreation use site.

Changes in this value must be interpreted with care. Reported increases (or decreases) in user-created developments might be the result of changes in time and resources dedicated to on-the-ground patrol, rather than in the actual character of use.

There may be additional user-developed amenities that are not accounted for in this monitoring strategy (e.g., fixed climbing anchors). That they are not included here does not mean they should be ignored or unmanaged.

Ancillary Data

Additional ancillary data should include a map file or other description of which developments are included in the database, in particular, which trails are considered "agency," and which are considered "user-created."

Recreation Measure 4-6. ***Type and extent of management restrictions***

Technique

Each of the following types of regulations is assigned a score, depending on its degree of restriction. If a wilderness has more than one type of regulation within a given category, the score will be assigned that corresponds to the most restrictive regulation in place.

Category	Type of restriction	Score
Campfires	No regulation	0
	Designated site; or (non-emergency) seasonal restrictions; or prohibited above (or below) designated elevation; or mandatory setback	1
	Total prohibition	2
Camping	No restriction	0
	Any mandatory setback	1
	Designated sites	2
	Assigned sites	3
	Overnight use prohibited	4
Group size limits	No restriction	0
	Group size limits in place	1
Area closure	No restriction	0
	Area closed to use	5
Fees	No fees	0
	Fees charged of selected user type	1
	Fees charged of all visitors	2
Permits	No permit or registration	0
	Voluntary self-registration	1
	Mandatory, non-limiting permit or registration	2
	Mandatory, use limited	3
Human waste	No regulation	0
	Pack out required	3
Length of stay	No restrictions on length of stay (other than standard agency-wide restrictions)	0
	Length of stay limited (in excess of standard agency-wide restrictions)	1
Stock use	No restrictions	0
	Grazing by stock prohibited	1
	No off-trail stock use	2
	No camping with stock	3
	Stock use prohibited	4
Other activity-specific regulations	No restriction	0
	Limited (other than by area)	1
	Prohibited	2

After the score is assigned for each category of regulation, these scores will be weighted to reflect the geographic coverage of the regulation as follows:

1 = if the regulation applies to a sub-area of wilderness or all of the wilderness for only part of the year

2 = if the regulation applies to an entire wilderness

The value of the Type and Extent of Management Restrictions is the sum of the resulting numbers.

Definitions

Fees: count fees that are charged for access to commonly-used parking areas even if access to wilderness is not the sole purpose of the parking area.

Other activity-specific regulation: examples include limitations or prohibitions on swimming, dogs, rockhounding, etc.

Example

Category	restriction score	weight	total
Campfires	1	2	2
Camping	2	1	2
Group size limits	1	2	2
Area closure	0		0
Fees	0		0
Permits	1	2	2
Human waste	0		0
Length of stay	0		0
Stock use	1	1	1
No swimming in Ojo Alamo	2	1	2
Dogs on leash Mar 1 - Nov 30	1	1	1
		report this value →	**12**

Sideboards & Notes

Data will be gathered every five years. Over time, an increase in this value is a decrease in this indicator of wilderness character.

Fees are counted in this measure if they are assessed for a non-wilderness purpose but would be required on wilderness users (e.g., parking fees, area entrance fees)

Do not count emergency closures in this measure.

Direct regulatory actions taken to increase opportunities for solitude will be defined as confining. Consequently, improvements in one opportunity necessarily entail declines in another. This should be explicitly noted where relevant, and ancillary data should track the rationales for actions taken. Similarly, direct regulatory actions taken to improve (or preserve) natural conditions will be defined as confining, and rationales should be noted in the ancillary data.

The value only captures three levels of extent (no regulation, sub-area, and total wilderness). Computing a more precise measure of spatial extent was deferred until some possible future revision in an effort to reduce the burden of reporting such new data.

Regulations imposed outside wilderness may differ in the way they affect the wilderness experience from regulations that govern behavior once a person enters a wilderness. This measure does not take into account whether regulations affect a person before the trip (e.g., use limits) or after they are inside a wilderness (e.g., campfire prohibitions).

UNIQUE / SUPPLEMENTAL

Unique Measure 5-1. S*everity of disturbances to cultural resources*

Technique

Each monitored cultural resource is classified as to its status, with scores assigned by category. Scores for each resource are summed to generate a total score reported for this measure.

For each monitored cultural resource, if the status is:	Score
good	1
fair	2
poor	5
No Longer Eligible (NLE)	10

Definitions

Cultural Resources: for the purpose of this specific monitoring**,** may include *in situ* objects, structures, landscapes, and other ethnographic resources.

Monitored Cultural Resource: Determination of which resources to include will be made by BLM cultural resource specialists in consultation with the State Historic Preservation Officer. It is expected that the most significant resources (not all cultural resources) will be monitored for this protocol. It is expected that any resource(s) chosen would be either eligible for or listed on the National Register of Historic Places. A wilderness may not have any cultural resources that rise to this level of significance, in which case this measure would not be reported

Good: the following conditions are all met:

a) The object(s), site, or area has been primarily affected only by natural forces over time; or, at the least, there is no evidence of modern human disturbance resulting in any loss of information potential. (Any past excavations must have been carried out in such a way that on-site integrity has been maintained, and any removal to off-site locations has been properly curated.)

b) Natural disturbance is acceptable and within the parameters of the appropriate wilderness or cultural resources plan. (For all status determinations, it is important to take into account that the criteria for preservation in wilderness are different than for non-wilderness settings. Listed properties must be adequately documented, but decisions to actively preserve them must be made in the context of individual wilderness plans, agency policy, the requirements of the Wilderness Act as well as the National Historic Preservation Act, and recent court decisions.)

c) Additional wilderness-specific conditions used to describe "good" conditions are met. These conditions should be agreed upon in consultation between Field Office and State Office cultural and wilderness program leads.

Fair: any one of the following conditions is present:

a) There appears to be minor disturbance by modern human activity (e.g., persistent re-arranging of potshards, visitor-created trails to the top of a culturally significant mountain, etc.).

b) Though not apparent to the untrained eye, some material may be missing from undocumented or poorly curated past removals, leading to some loss of information potential.

c) Greater-than-acceptable natural deterioration is threatened, but has not occurred.

d) Human-caused deterioration from off-site impacts (e.g., air quality issues threatening rock art, erosion from near-by road cuts, impacts from grazing livestock) is threatened, but has not occurred.

e) Additional wilderness-specific conditions used to describe "fair" conditions are met.

Poor: any one of the following conditions is present:

a) There is clear evidence of major disturbance by modern human activity (e.g., pot hunting, graffiti, arson).

b) The site has clearly lost much of its information potential.

c) Unacceptable, irreversible natural deterioration has occurred.

d) Human-caused deterioration from off-site impacts has occurred.

e) Additional wilderness-specific conditions used to describe "poor" conditions are met.

NLE: the cultural resource has so deteriorated from human-caused effects that it is deemed no longer eligible for the National Register of Historic places.

Example

Resource i.d.	score	comments
LM 703345	1	
Three Door Ruin	2	digging in midden reported 8/2010; monitoring schedule adjusted
First Man Mesa	1	
report this value →	**4**	

Sideboards & Notes

Data for this report will be gathered every five years, though proper stewardship will require far more frequent monitoring. Over time, an increase in this value is a decrease in this indicator of wilderness character.

Note that there are important differences in what might be an acceptable level of natural degradation of cultural resources between those in wilderness and elsewhere. See discussion in the definition of "**good**," above.

This measure is subjective. Status classification should be documented as completely as possible to assure adequate comparisons over time with changing staff.

Changes in this reported value must be interpreted carefully. An increase in the value reported for this measure may be the result of adding an additional "significant" site rather than the deterioration of existing sites. It might be necessary that two scores be reported for this measure: the value (and change, if any) from the previous report in only the sites included in the baseline report, and a second value of *all* currently monitored cultural resources. In essence, a new "baseline" might be produced.

Unique Measure 5-2. ***Index of the status of indigenous species that are listed, or are candidates for listing, as threatened or endangered***

Technique

Each species is classified as to its significance and status, with scores assigned by category. Scores are multiplied together for each species monitored under this measure, and the resulting products are summed to generate a total score reported for this measure.

Species	Significance	Score		Status	Score	Total
	Candidate Threatened Endangered	1 2 3		good fair poor extirpated	1 2 3 5	

Definitions

Indigenous: a species which originally inhabited the area now designated as wilderness.

Candidate: a species being considered for federal or state listing as threatened or endangered, but for which either no final determination has been made or not enough information has yet been collected to warrant listing. For this monitoring protocol, this includes species determined by the BLM to be "of concern."

Threatened: a species determined by federal or state agencies to be likely to become endangered within the foreseeable future throughout all or a significant portion of its range

Endangered: a species determined by federal or state agencies to be in danger of extinction throughout all or a significant portion of its range

Good: critical habitat of the species is not at risk either within the wilderness or outside the wilderness in the immediate area; species population is stable or naturally increasing (i.e., increases are not due to a species crowding into the wilderness because of habitat degradation elsewhere)

Fair: critical habitat of the species is at moderate risk either within the wilderness or outside the wilderness in the immediate area, and species population appears stable

Poor: critical habitat of the species is at risk with improvement difficult or unlikely, or species population is decreasing

Extirpated: an indigenous species which no longer exists in this wilderness, but is believed to still exist elsewhere

Example

A wilderness has: an endemic buckwheat that is propagating well within the wilderness and has never had much of a presence outside the wilderness, yet due to its small range it is a candidate species; a candidate-species raptor that is rapidly losing habitat outside the wilderness and the wilderness is not large enough to support a sustainable population; and an endangered ferret that appears to have been extirpated from the wilderness.

Species	significance score	status score	total	comments
Buckwheat buckwheatese	1	1	1	
Raptor raptoris	1	3	3	
Ferret ferretii	3	5	15	last reported in 1950s
		report this value →	**19**	

Sideboards & Notes

Data for this report will be gathered every five years, though proper stewardship will require far more frequent monitoring. Over time, an increase in this value is a decrease in this indicator of wilderness character.

This measures track trends only in federally- or state-listed species. "Iconic" or "problem" species (due to, for instance, habituation issues) should be tracked under either **Measure 2-1** or an additional **Measure 5-3**.

The use of broad categories is a crude measure, but it is unlikely that most wilderness areas have more accurate data on the abundance and distribution of these species. It should be possible to use field experience coupled with professional judgment to assign broad categories.

It must be realized that the status portion of this measure is subjective. Status classification should be documented as completely as possible to assure adequate comparisons over time with changing staff. The ancillary information should include common and scientific names of the species included in this measure, as well as an indication as to how confident the reporting office is in the species' status.

A decrease in this value over time could be caused by actions not under the control of a wilderness manager, but nonetheless impacts naturalness.

Changes in this reported value must be interpreted very carefully. As it is likely that few BLM wilderness areas have had a complete biological survey, an increase in the value reported for this measure may well be the result of adding species to be tracked rather than deterioration in the status of already-tracked species. In addition, an increase in the score might result from a Candidate species being listed, with no change in its in-wilderness status. Therefore, it may be necessary to report two scores for this measure: 1) the value for the species included in the previous report (maintaining the same level of significance indicated in the previous report); and 2) a value that includes the originally tracked species at their "new" status, plus any additional species to be tracked in the future. Trend would be determined by comparing the old value with the new value #1, and a new "baseline" would be established by the new value #2. (In essence, a new "baseline" might be produced every five years.)

Data Analysis

[Reserved.]

Data Reporting

[Reserved.]

Data Storage

[Reserved.]

Change Management

As the monitoring of wilderness character has never been attempted before, a viable change management process is needed to ensure that this protocol reflects contemporary thinking about wilderness character, that lessons learned during implementation can be used to improve the protocol, and that the protocol uses the best available data.

Minor change management could be conducted every year and includes:

Modification of existing indicators and measures as necessitated by, for example:

Experience gained during the practical implementation of the monitoring protocol

Availability of new data sources for existing indicators and measures

New research or other perspectives about what constitutes wilderness character

Changes to the Wilderness Character reporting or data storage requirements

Change management requests can be submitted to State Wilderness Program Leads at any time. During the first two years of the collection of baseline data, the requests will be reviewed by the Wilderness Character Monitoring Team monthly. Thereafter, change management requests will be stockpiled for evaluation and resolution once annually. Requests are submitted by any BLM employee, wilderness researchers, or the public. The State Wilderness Lead consolidates the change requests and conducts an initial assessment of the benefits and impacts of implementing the proposed changes, as well as the impacts of not implementing the changes. The collected requests and initial assessments are sent to the Washington Office Wilderness Program, for forwarding to the Wilderness Character Monitoring Team, which will make a final recommendation on the proposed change.

Major change management should be conducted annually during the first five years of collecting baseline data, and every five years thereafter. Major change management is more comprehensive than the process outlined above. It includes evaluation of:

Appropriateness of the currently used wilderness character qualities, questions, indicators, and measures — including the potential for deleting existing measures or adding new ones

Appropriateness of the data analysis and synthesis techniques

As wilderness character monitoring is new, the basic foundation of this protocol needs to be periodically re-evaluated by those directly associated with the protocol, academia, and other users. This "fresh look" should be based on lessons learned after several years of practical implementation, as well as on any new thinking about wilderness character. This process would likely entail conducting an interagency workshop and developing a work plan for the resolution of issues and concerns identified by participants.

<u>Sideboards for the development of new Unique / Supplemental measures</u>

Unique / Supplemental values may include "ecological, geological, or other features of scientific, educational, scenic, or historical value" (Wilderness Act, section 2(c)). Usually, new measures of this quality would only be used to capture those values not already addressed elsewhere in this process (e.g., scenic values under the Natural or Undeveloped qualities, wildlife/botanical values under the Natural quality, etc.)

All measures should be displayed in a format matching that used throughout this Implementation Guide. In addition any measure should be designed so that an ***increase*** in the value of the measure corresponds to a ***decrease*** in this indicator of wilderness character.
In general, new measures should follow this format:

Unique / Supplemental

What are the trends in _____that are unique or special to this wilderness?

<u>Status of _____</u>

5-3. Number and severity of disturbances to _____

or

5-3. Index of status of _____

Appendix A

Monitoring Forms

Wilderness Character Data Report 2010

wilderness name: _____

Measure		Value
1-1	Number of authorized actions and persistent structures designed to manipulate plants, animals, pathogens, soil, water, or fire	
1-2	Percent of natural fire starts that are manipulated within the boundaries of the wilderness	
1-3	Number of unauthorized actions by agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire	
2-1	[Reserved.]	
2-2	Abundance and distribution of non-indigenous species	
2-3	AUMs of livestock use inside wilderness	
2-4	*(not reported at this level)*	
2-5	*(not reported at this level)*	
2-6	*(not reported at this level)*	
2-7	*(not reported at this level)*	
3-1	Index of physical development for authorized or pre-designation structures and developments	
3-2	Area and existing or potential impact of inholdings	
3-3	Type and amount of administrative and non-emergency use of motor vehicles, motorized equipment, and mechanical transport	
3-4	Proportional use of motor vehicles, motorized equipment, and mechanical transport in emergency responses	
3-5	Type and amount of use of motor vehicles, motorized equipment, and mechanical transport not authorized by the federal land manager	
4-1	Amount of visitor use	
4-2	Severity and area of wilderness affected by travel routes inside the wilderness	
4-3	Severity and area of wilderness affected by developments that are within proximity of the wilderness	
4-4	Type and number of agency-provided recreation facilities	
4-5	Type and number of user-created recreation facilities	
4-6	Type and extent of management restrictions	
5-1	Severity of human-caused disturbances to cultural resources	
5-2	Index of the status of indigenous species that are listed as threatened and endangered, sensitive, or of concern	
	locally determined (if applicable)	

Number of authorized actions and persistent structures designed to manipulate plants, animals, pathogens, soil, water, or fire

wilderness name: _____

unique i.d. name or number	type	reason	authorization
0	← report this value		

DIRECTIONS

1. Fill out form as each new project is implemented. Double click on table to fill out form in Excel. Include one entry for each persistent structure that is in operation at any time during the fiscal year. Insert new rows as necessary.
    a. Make sure each project has a unique identifier (e.g., "Three-Spring Guzzler"; "2010.001") For structures, GPS coordinates are preferable.
    b. Briefly describe type of action or structure (e.g., "old guzzler"; "weed-herbicide"; "weed-mechanical")
    c. Briefly describe reason for action or structure (e.g., "support T&E species"; "improve Natural quality")
    d. Reference appropriate specific authorization (e.g., "EA NM-019-90-68")
2. COUNT should automatically calculate in Excel
3. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter data as described above
    b. COUNT the number of actions or structures listed. Enter this result in the Black Box.
4. **BLACK BOX**: the total number of actions or persistent structures. Enter this amount as the "Value" for Measure 1-1 on the Wilderness Character Data Report form.

Percent of natural fire starts that are manipulated within the boundaries of the wilderness

wilderness name: _____

unique i.d. name or number			manipulation
0	COUNT	SUM	0
		PERCENT (report this value →)	#DIV/0!

DIRECTIONS

1. Double click on table to fill out form in Excel. Insert new rows as necessary.
   a. Make sure each natural fire start has a unique identifier (e.g., "Big Sage Flat Fire")
   b. If the fire is manipulated within the boundaries of the wilderness, put a "1" in the "manipulation" column; if not, place a "0"
2. Count, Sum, and Percent should all automatically calculate in Excel.
3. *If you are not using an active form (with embedded Excel spreadsheet):*
   a. Enter data as described above
   b. SUM the entries in the "manipulation" column
   c. Divide the SUM by the number of fires listed, multiply by 100, and round to the nearest whole number. Enter this result in the Black Box.
4. **BLACK BOX**: the percent of natural fire starts that are manipulated within the boundaries of the wilderness. Enter this number (do not use the percent sign) as the "Value" for Measure 1-2 on the Wilderness Character Data Report form.

Number of unauthorized actions by agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire

wilderness name: _____

unique i.d. name or number	type	agency/group/person responsible	BLM response
0	← report this value		

DIRECTIONS

1. Fill out form as each new action is discovered. Double click on table to fill out form in Excel. Insert new rows as necessary.
    a. Make sure each project has a unique identifier (e.g., "T12N, R3W, Sec.5 Chukkar Guzzler")
    b. Briefly describe type of action or structure (e.g., "new guzzler"; "fish stocking")
    c. List agency/group/person responsible (e.g., "unknown"; "DOW")
    d. Briefly describe BLM response to each action (e.g., "removed guzzler"; "none")
2. COUNT should automatically calculate in Excel
3. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter data as described above
    b. COUNT the number of actions or structures listed. Enter this result in the Black Box.
4. **BLACK BOX**: the total number of unauthorized actions. Enter this amount as the "Value" for Measure 1-3 on the Wilderness Character Data Report form.

[See Appendix B]

Abundance and distribution of non-indigenous species

wilderness name: _____

Species	areal extent score	density score	total	comments
			0	
			0	
			0	
			0	
		report this value →	**0**	

DIRECTIONS

1. Double click on table to fill out form in Excel. For each species, enter the areal extent score and the density score as explained in the Implementation Guide. Insert new rows as necessary. Make sure the formatting from the "total" column is copied as well.
2. Comments could explain the rationales of the ratings or give locations.
3. The "totals" and SUM should automatically calculate in Excel.
4. *If you are not using an active form (with embedded Excel spreadsheet):*
   a. Enter data as described above
   b. Multiply the areal extent score by the density score for each species and enter each result in the corresponding "total" column.
   c. SUM the "total" column. Enter this result in the Black Box.
5. **BLACK BOX**: Abundance and distribution of non-indigenous species. Enter this number as the "Value" for Measure 2-2 on the Wilderness Character Data Report form.

AUMs of livestock use inside wilderness

wilderness name: _____

allotment or pasture	AUMs used	% w/in Wilderness	score	comments
			0	
			0	
			0	
			0	
			0	
		report this value →	**0**	

DIRECTIONS

1. Double click on table to fill out form in Excel. For each allotment or pasture, enter the AUMs of *actual* use (not *permitted* use, which may be higher). Enter the percent of the allotment or pasture which is within the wilderness (e.g., if ¾ of the allotment is inside the wilderness, enter "75," not ".75." Every allotment should have a unique identifier. Insert new rows as necessary. Make sure the formatting from the "score" column is copied as well.
2. If less than 100% of the allotment or pasture is within wilderness, use the "comments" column to describe how the estimated percentage was calculated.
3. Score and Sum should automatically calculate in Excel.
4. *If you are not using an active form (with embedded Excel spreadsheet):*
   a. Enter data as described above.
   b. Multiply each "AUMs used" by the "% within wilderness," divide by 100, and enter the result in the "score" column.
   b. Add the "scores" together. Enter this result in the Black Box.
5. **BLACK BOX**: AUMs of livestock use inside wilderness. Enter this number as the "Value" for Measure 2-3 on the Wilderness Character Data Report form.

Wilderness Character Measure 2-4 2010

thru

Wilderness Character Measure 2-7 2010

[Reserved]

Index of physical development for authorized or pre-designation structures and developments

wilderness name: _____

reference map:			
Buildings	value		score
			0
			0
			0
Fences	value	length (nearest .1 mile)	score
			0.0
			0.0
			0.0
Dams	value		score
			0
			0
			0
ROWs (etc.)	value	length (nearest .1 mile)	score
			0.0
			0.0
			0.0
Non-linear infrastructure or site	value		score
			0
			0
			0
Mines	value	size (nearest acre)	score
			0
			0
			0
		report this value →	**0.0**

DIRECTIONS

1. Double click on table to fill out form in Excel. Insert new rows as necessary. Make sure the formatting from the "score" column is copied as well.
   a. Make sure each piece of infrastructure has a unique identifier (e.g., "Big Sage Patrol Cabin"; "corral at T12N R3W, Sec. 34, NENE"). GPS coordinates are preferable.
   b. Enter the value of the structure or development from the Implementation Guide in the "value" column.
   c. For fences and ROWs, enter the length to the nearest tenth of a mile in the length column (e.g., for a fence 2¼ miles long, enter "2.3"

d. For mines, enter the size to the nearest acre. Round up (e.g., for a mine 1.3 acres enter "2" in the size column). For mines under 1 acre, enter "1"

2. "Scores" and SUM should automatically calculate in Excel.
3. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter Value and Length or Size (if applicable) for each structure or development as described above
    b. For Buildings and Non-linear infrastructure entries, copy Value amount into Score column
    d. For Fences and ROWs entries, multiply the Value by the Length, and that product by 10. Enter the result in the Score column
    e. For Mines, multiply the Value by the size. Enter the result in the Score column
    c. SUM the Score column. Enter this result in the Black Box.
4. **BLACK BOX**: the Index of Physical Development. Enter this number as the "Value" for Measure 3-1 on the Wilderness Character Data Report form.

Area and existing or potential impact of inholdings

wilderness name: _____

Inholding location	Acres	Development rating	score
			0
			0
			0
			0
		report this value →	**0**

DIRECTIONS

1. Double click on table to fill out form in Excel. Insert new rows as necessary. Make sure the formatting from the "score" column is copied as well.
    a. Make sure each inholding includes the legal location
    b. Enter the acreage of the inholding in the "Acres" column
    c. Enter the development potential rating from the Implementation Guide in the "Development rating" column.
2. "Scores" and SUM should automatically calculate in Excel.
3. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter Acres and Development rating for each inholding as described above
    b. Multiply the Acres by the Development rating. Enter the result in the "score" column.
    c. SUM the "score" column. Enter this result in the Black Box.
4. **BLACK BOX**: the Inholding Index. Enter this number as the "Value" for Measure 3-2 on the Wilderness Character Data Report form.

Type and amount of administrative use (but not law enforcement or emergency use) of motor vehicles, motorized equipment, and mechanical transport

wilderness name: _____

Action or Project	# motor vehicles	days per motor vehicle	# non-motor mech. trans.	days per mech. Trans.	# motor equip.	days per motor equip.	score	MRA?	agency
							0		
							0		
							0		
							0		
						report this value →	**0**		

DIRECTIONS

1. Double click on table to fill out form in Excel. Insert new rows as necessary. Make sure the formatting from the "score" column is copied as well.
    a. Each action or project should have a unique name
    b. Enter the number of motor vehicles, pieces of mechanical transport and items of motorized equipment, as well as the number of days each is authorized, in the corresponding columns.
    c. Enter the identifier of the Minimum Requirements Analysis used to authorize these uses, as well as the agency using the equipment (e.g., "BLM"; "DOW")
2. "Scores" and SUM should automatically calculate in Excel.
3. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter data as described above
    b. Multiply the # of motor vehicles by the number of days these are authorized, and multiply that product by 2; multiply the # of pieces of mechanical transport by the number of days these are authorized; multiply the # of pieces of motorized equipment by the number of days these are authorized. Add the three multiplicands together, and enter the result in the "score" column.
    c. SUM the "score" column. Enter this result in the Black Box.
4. **BLACK BOX**: the Index of administrative and non-emergency use of prohibited equipment. Enter this number as the "Value" for Measure 3-3 on the Wilderness Character Data Report form.

Wilderness Character Measure 3-4 2010

Proportional use of motor vehicles, motorized equipment, and mechanical transport in law enforcement or emergency responses

wilderness name: _____

Law Enforcement Action or Emergency	# motor vehicles	days per motor vehicle	# non-motor mech. trans.	days per mech. trans.	# motor equip.	days per motor equip.	score	
							0	prohib. uses per emergency
							0	
							0	report this
							0	value ↓
0 COUNT						SUM	0	#DIV/0!

DIRECTIONS

1. Double click on table to fill out form in Excel. Insert new rows as necessary. Make sure the formatting from the "score" column is copied as well.
    a. Each emergency should have a unique name, including the lead agency
    b. Enter the number of motor vehicles, pieces of mechanical transport and items of motorized equipment, as well as the number of days each is authorized, in the corresponding columns.
2. "Scores," COUNT, SUM, and Black Box should automatically calculate in Excel.
3. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter data as described above
    b. Multiply the # of motor vehicles by the number of days these are authorized, and multiply that product by 2; multiply the # of pieces of mechanical transport by the number of days these are authorized; multiply the # of pieces of motorized equipment by the number of days these are authorized. Add the three multiplicands together, and enter the result in the "score" column.
    c. SUM the "score" column.
    d. COUNT the number of emergencies.
    e. Divide the SUM by the COUNT. Enter this result in the Black Box.
4. **BLACK BOX**: the proportional use of prohibited equipment in emergencies. Enter this number as the "Value" for Measure 3-4 on the Wilderness Character Data Report form.

Type and amount of use of motor vehicles, motorized equipment, and mechanical transport not authorized by the federal land manager

wilderness name: _____

Category	frequency score	extent score	total	comments
Public			0	
Permittees			0	
Agencies			0	
	report this value →		**0**	

DIRECTIONS

1. Double click on table to fill out form in Excel. For each category of user, enter the frequency of unauthorized use score and the extent of unauthorized use score as explained in the Implementation Guide. Insert new rows as necessary. Make sure the formatting from the "total" column is copied as well.
2. Comments could include responsible parties (if known) and BLM actions taken.
3. "Totals" and SUM should automatically calculate in Excel.
4. *If you are not using an active form (with embedded Excel spreadsheet):*
   a. Enter data as described above
   b. Multiply the frequency score by the extent score for each category and enter each result in the corresponding "total" column.
   c. SUM the "total" column. Enter this result in the Black Box.
5. **BLACK BOX**: Index of the unauthorized use of prohibited equipment. Enter this number as the "Value" for Measure 3-5 on the Wilderness Character Data Report form.

Wilderness Character Measure 4-1 2010

Amount of visitor use

wilderness name: _____

Number	comments
[redacted]	

DIRECTIONS

1. Enter the number used to approximate visitor use. In the "comments" section, detail the procedure used to derive this number.
2. **BLACK BOX**: Estimated amount of visitor use. Enter this number as the "Value" for Measure 4-1 on the Wilderness Character Data Report form.

Area of wilderness affected, and severity of effect, from travel routes inside the wilderness

wilderness name: _____

Area	Severity	reference

DIRECTIONS

1. Enter the "Area" and "Severity" as calculated according to the Implementation Guide. The "reference" section should either link to or name the GIS map used to generate this data.
2. **BLACK BOX**: Area of the wilderness affected. Enter these numbers as the "Value" for Measure 4-2 on the Wilderness Character Data Report form.

Wilderness Character Measure 4-3 2010

Area of wilderness affected, and severity of effect, from developments that are near the wilderness

wilderness name: _____

Area	Severity	reference

DIRECTIONS

1. Enter the "Area" and "Severity" as calculated according to the Implementation Guide. The "reference" section should either link to or name the GIS map used to generate this data.
2. **BLACK BOX**: Area of the wilderness affected. Enter these numbers as the corresponding "Values" for Measure 4-3 on the Wilderness Character Data Report form.

Type and number of agency-provided recreation facilities

wilderness name: _____

reference map:					
Trail segment	length (nearest .1 mile)	devel. score	signs score	total	comments
				0	
				0	
				0	
				0	
Major trail feature		value	number	total	
				0	
				0	
				0	
Campsite development		value	number	total	
				0	
				0	
				0	
Amenity		value	number	total	
				0	
				0	
				0	
			report this value →	0.0	

DIRECTIONS

1. Double click on table to fill out form in Excel. Insert new rows as necessary. Make sure the formatting from the "total" column is copied as well.
   a. Make sure each trail segment has a unique identifier (e.g., "Piñon Trail, trailhead to mile 2.3"; "Piñon Trail, AA to AB"). Major trail features, campsite developments, and campsite amenities should have unique identifiers unless there are several grouped together (e.g., 2 ladders on Angel Arch Trail). GPS coordinates are preferable.
   b. For each trail segment, enter the length to the nearest tenth of a mile in the length column (e.g., for a trail segment 2¼ miles long, enter "2.3")
   c. For each trail segment, enter the development score and the signs score from the Implementation Guide in their respective columns.
   d. For major trail features, campsite developments, and campsite amenities, enter the value of each as determined in the Implementation Guide. Enter "1" as the number unless you have grouped similar developments together as described above.

e. Comment section should be used to link or reference map or other GIS data to track locations of each specific facility.

2. "Totals" and SUM should automatically calculate in Excel.
3. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter length, development score, and signs score for each trail segment using the Implementation Guide as described above. Multiply these values together for each trail segment's "total."
    b. For major trail features, campsite developments, and campsite amenities, enter the value of each as detailed in the Implementation Guide. If you are grouping like developments together, multiply that value accordingly. Enter the value (or the value multiplied by the number of like developments) in each respective cell in the "total" column.
    c. SUM the "total" column. Enter this result in the Black Box.
4. **BLACK BOX**: Index of agency-provided recreation facilities. Enter this number as the "Value" for Measure 4-4 on the Wilderness Character Data Report form.

Type and number of user-created recreation facilities

wilderness name: _____

reference map:					
User-created trail segment	length (nearest .1 mile)	devel. score	signs score	total	comments
				0.0	
				0.0	
				0.0	
				0.0	
User-degraded trail segment	length (nearest .1 mile)			total	
				0.0	
				0.0	
				0.0	
User-developed major trail feature		value	number	total	
				0	
				0	
				0	
User-developed campsite		value	number	total	
				0	
				0	
				0	
User-developed amenity		value	number	total	
				0	
				0	
User-developed rec site (non-camping)		value	number	total	
				0	
				0	
				0	
			report this value →	0.0	

DIRECTIONS

1. Double click on table to fill out form in Excel. Insert new rows as necessary. Make sure the formatting from the "total" column is copied as well.
   a. Make sure each trail segment has a unique identifier (e.g., "old road to windmill," "trailhead to stockpond," "Trail 101, segment AA") User-degraded trail segments, major trail features, campsite developments, campsite amenities, and non-camping recreation sites should have unique identifiers unless there are several grouped together (e.g., "2 campsites at Ladder Canyon Overlook"). GPS coordinates are preferable.

b. For each "trail segment" or "degraded trail segment," enter the length to the nearest tenth of a mile in the length column (e.g., for a trail segment 2¼ miles long, enter "2.3")

c. For each trail segment, enter the development score and the signs score from the Implementation Guide in their respective columns.

d. For major trail features, campsite developments, campsite amenities, and non-camping recreation sites, enter the value of each as determined in the Implementation Guide. Enter "1" as the number unless you have grouped similar developments together as described above.

e. Comment section should be used to link or reference map or other GIS data to track locations of each specific facility.

2. "Totals" and SUM should automatically calculate in Excel.

3. *If you are not using an active form (with embedded Excel spreadsheet):*

a. Enter length, development score, and signs score for each trail segment using the Implementation Guide as described above. Multiply these values together for each trail segment's "total."

b. For each degraded trail segment, enter the length (to the nearest 0.1 mile). Double that amount, and enter the result in that segment's "total" cell.

b. For major trail features, campsite developments, amenities, and non-camping recreation sites, enter the value of each as detailed in the Implementation Guide. If you are grouping like developments together, multiply that value accordingly. Enter the value (or the value multiplied by the number of like developments) in each respective cell in the "total" column.

c. SUM the "total" column. Enter this result in the Black Box.

4. **BLACK BOX**: Index of user-created recreation facilities. Enter this number as the "Value" for Measure 4-5 on the Wilderness Character Data Report form.

Type and extent of management restrictions

wilderness name: _____

Category	restriction score	weight	total
Campfires			0
Camping			0
Group size limits			0
Area closure			0
Fees			0
Permits			0
Human waste			0
Length of stay			0
Stock use			0
Other activity-specific regulations			0
Other activity-specific regulations			0
Other activity-specific regulations			0
		report this value →	**0**

DIRECTIONS

1. Double click on table to fill out form in Excel. For each category of restriction, enter the "restriction score" and "weight" as explained in the Implementation Guide. Insert new "*other activity-specific regulations"* rows as necessary. Make sure the formatting from the "total" column is copied as well.
2. "Totals" and SUM should automatically calculate in Excel.
3. *If you are not using an active form (with embedded Excel spreadsheet):*
   a. Enter data as described above
   b. Multiply the restriction score by the weight for each category and enter each result in the corresponding "total" column.
   c. SUM the "total" column. Enter this result in the Black Box.
5. **BLACK BOX**: Index of management restrictions. Enter this number as the "Value" for Measure 4-6 on the Wilderness Character Data Report form.

Wilderness Character Measure 5-1 2010

Severity of disturbances to cultural resources

wilderness name: _____

Resource i.d.	score	comments
report this value →	**0**	

DIRECTIONS

1. For each cultural resource, enter the condition score as explained in the Implementation Guide. Every cultural resource should have a unique identifier. Insert new rows as necessary. Make sure the formatting from the "score" column is copied as well.
2. Comments could include details on the status or trends of each resource.
3. SUM should automatically calculate in Excel.
4. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter data as described above
    b. Add the individual condition scores together. Enter this result in the Black Box.
5. **BLACK BOX**: Index of severity of human-caused disturbances to cultural resources. Enter this number as the "Value" for Measure 5-1 on the Wilderness Character Data Report form.

Index of the status of indigenous species that are listed or are candidates for listing as threatened or endangered

wilderness name: _____

Species	significance score	status score	total	comments
			0	
			0	
			0	
			0	
report this value →			**0**	

DIRECTIONS

1. For each species, enter the significance score and the status score as explained in the Implementation Guide. Insert new rows as necessary. Make sure the formatting from the "total" column is copied as well.
2. Comments could explain the rationales of the ratings.
3. The "totals" and SUM should automatically calculate in Excel.
4. *If you are not using an active form (with embedded Excel spreadsheet):*
   a. Enter data as described above
   b. Multiply the significance score by the status score for each category and enter each result in the corresponding "total" column.
   c. SUM the "total" column. Enter this result in the Black Box.
5. **BLACK BOX**: Index of the status of select species of concern. Enter this number as the "Value" for Measure 5-2 on the Wilderness Character Data Report form.

Appendix B

Measure 2-1

Natural Measure 2-1. *Status of native biological communities*

Being able to monitor status and trends in the biophysical components of wilderness is an essential part of wilderness stewardship, as well as a critical task in measuring attributes of wilderness character. It is also one of the most difficult.

Monitoring complete biological diversity in a wilderness is not practical. Instead, BLM wilderness specialists must work with other BLM natural resource specialists to determine which group or groups of species can serve as surrogate measures of biological diversity and its trend through time. Each office, subject to "approval" by the Wilderness Character Monitoring Team, must decide on what approach is both practical and adequate. There is no hard and fast rule about the "right" selection, for Measure 2-1, but the decision must be informed by interdisciplinary consensus.

Outlines of procedures for two different approaches follow. They are listed in decreasing order of complexity and utility, and increasing order of feasibility.

INDICATOR SPECIES PROTOCOLS

In view of costs and ease of obtaining data, BLM biologists have often used birds and vascular plants to represent trends in biological diversity. Biologists may recommend that other species are more appropriate to a given wilderness because of special circumstances. Populations of important "keystone" species, or species that have a disproportionate effect on the natural ecosystem functions of the wilderness, can also be a measure of the natural characteristics of the wilderness. Monitoring a species population can be directly or inversely related to "naturalness" and natural ecological function. For example, common ravens may serve as an inverse indicator of natural quality. As human habits increase the number of ravens, the diversity and populations of other native species may be declining (desert tortoises, breeding birds).

Several points to consider will help Field Office employees decide whether monitoring of species is important and feasible to undertake as part of monitoring for the Natural quality of wilderness character:

1. **Are there good information sources available concerning the most practical biological measures for natural diversity and populations for species of interest?** It is critical for a wilderness specialist to work with other specialists in the Field, District, or State Offices, as well as members of the public, to determine which individual species or suites of species to monitor and by which protocol. The efficiency of a protocol is measured by cost and statistical economy (i.e., the smallest sample size needed to have a pre-determined confidence that data are accurate). A biologist versed in statistical design is an invaluable resource, and can help estimate scheduling, labor needs, and required skill sets.

2. **Are there sufficient time, skill, and dedication needed to make field monitoring a success?** The wilderness program lead cannot complete adequate field monitoring alone. A network of co-workers, volunteers, and/or contractors is probably necessary to assume responsibility for field monitoring. It may take time to create and inspire a monitoring support/work team . Wilderness "friends" groups can be a tremendous source of support as "citizen scientists" to accomplish monitoring tasks, including training and data management. Using public participation to monitor biological diversity with can help build champions for wilderness and a sense of ownership for what is, after all, the public's land.

3. **Is there a continuously updated multi-year plan for funding field monitoring?** Even a corps of dedicated volunteers will need some funding for specialized BLM equipment, reimbursements, and other necessities to make monitoring successful. In some cases, a local partnership for wilderness monitoring can become self-funding, but reaching that point may take some time. A BLM resource specialist or an outside partner who can find potential funding sources and write successful grant applications can be crucial. Even if

outside funding eventually is realized, it is important to have an alternate monitoring plan in case one funding source unexpectedly disappears.

4. **Is there a training program?** One key element of successful field monitoring is training co-workers, volunteers, and contractors to conduct the monitoring protocol successfully, so that data collection is reliable (the measure yields the same value when monitored by different people and the conditions are the same).

5. **Is there a data management plan?** Eventually, this Implementation Guide will address long-term data management for trends in wilderness character. But this is unlikely to be sufficient to track the specifics of an indicator species protocol. Quality control is an important feature of data management. At the end of each monitoring day, a specially-designated person or group needs to verify that the day's field data have been recorded properly and fully and that subsequent transcription of data from data sheets or data loggers to spreadsheets or databases is accurate. Proofing, error checking, and/or double data entry are essential to the production of high-quality data for statistically valid trend detection. Data that are not managed properly are worse than no data at all – they are useless and expensive.

These five questions may appear intimidating at first. Startup is the most challenging time for developing a successful indicator species protocol. Making adjustments to the protocol is common early on during protocol testing and pilot monitoring. Preparing a written study plan can be time consuming; therefore, using and adapting an existing protocol is preferable. Random selection of monitoring points, transect endpoints, and plot corners is essential for a valid statistical design. These points should be depicted on a site map, and their UTM (Universal Transverse Mercator) coordinates should become a permanent part of the monitoring protocol. In time, field monitoring for biological diversity and keystone populations becomes second nature– and provides invaluable information for adaptive management of BLM wildernesses.

These standards typically utilize a combination of qualitative indicators to assess upland, riparian, and biotic health to determine how well the ecological processes of the site are functioning (see Interpreting Indicators of Rangeland Health, Tech ref 1734-6 and Rangeland Health Standards H-4180-1). The Standards use upland health indicators, riparian health indicators, and biotic indicators.

Technique

For each **reference point**, if the reference point is determined to be:	Assign that reference point the value:
Properly Functioning Condition: (1) Condition in which vegetation and ground cover maintain soil conditions that can sustain natural biotic communities. (2) Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to: dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bed load, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize stream banks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; support greater biodiversity. (3) Uplands function properly when the existing vegetation and ground cover maintain soil conditions capable of sustaining natural biotic communities. The functioning condition of uplands is influenced by geomorphic features, soil, water, and vegetation.	1
Functioning at Risk**:** (1) Condition in which vegetation and soil are susceptible to losing their ability to sustain naturally functioning biotic communities. Human activities, past or present, may increase the risks. (2) Uplands or riparian-wetland areas that are properly functioning, but a soil, water, or vegetation attribute makes them susceptible to degradation and lessens their ability to sustain natural biotic communities. Uplands are particularly at risk if their soils are susceptible to degradation. Human activities, past or present, may increase the risks.	2
Nonfunctioning Condition: (1) Condition in which vegetation and ground cover are not maintaining soil conditions that can sustain natural biotic communities. (2) Riparian-wetland areas are considered to be in nonfunctioning condition when they don't provide adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, or other normal characteristics of riparian areas. The absence of a floodplain may be an indicator of nonfunctioning condition..	3
NOTE 1: Riparian reference points have a single assessment of condition; upland reference points have two assessments of condition (upland function and natural biotic community). Assign values noted for each assessment. **NOTE 2: Not all expressions of functioning condition used above may apply to a given wilderness.**	

Example

A wilderness has six reference points from which rangeland health standards are determined. Three are in properly functioning condition for upland health and biotic communities, one is functioning at risk for upland health, and properly functioning for biotic communities, one is nonfunctioning for upland health and biotic communities, and one is a riparian monitoring point and is properly functioning. The index of the primeval range of variability is:

reference point	riparian condition	upland condition	biotic community	total	comments
A		1	1	2	
B		1	1	2	
C		1	1	2	See map Little Sage Wilderness RHA - 2010
D		2	1	3	
E		3	3	6	
F	1			1	
			report this value →	**16**	

Sideboards & Notes

Qualitative assessment of rangeland health provides land managers and technical assistance specialists with a good communication tool for use with the public. Many Field Offices already utilize this method to assess the rangelands. However, training and experience is necessary to use this method properly. In addition, it does not establish the cause of rangeland health problems; it simply identifies where they exist.

Any system used must include native species as an integral factor in ecosystem health. Consider that soil stability can be achieved utilizing introduced species, but in a wilderness setting the goal is that native species produce the appropriate soil stability. For example, if utilizing the Standards for Rangeland Health as the monitoring method, the rating plan needs to incorporate this management goal.

An individual unit may incorporate unit specific needs into their monitoring methods for this measure. For example:

Rare vegetation types to address unique ecological attributes that do not necessarily emerge from a more general ecosystem monitoring, or be apparent additively from a tally of special status species under **Measure 5-2**.

Riparian monitoring may be added separately if the overall ecosystem monitoring applied does not include it. Riparian area monitoring is a key elements in BLM management policy and likely to be significant ecologically in a changing environment.

Fuelwood monitoring may be added in some forested/wooded areas where areas picked over for firewood cause change to the woody composition of litter or standing structure leading to significant biological effects and that affect is not tracked in either **Measure 2-7** or **Measure 5-2**.

Ancillary Data

"Comments" should include a reference to the protocol used. Each area's Wilderness Character Monitoring File should contain a written rationale for the conclusions of the analysis.

Wilderness Character Measure 2-1 (provisional) 2010

Status of native biological communities

wilderness name: _____

reference point	riparian condition	upland condition	biotic community	total	comments
				0	
				0	
				0	
				0	
				0	
				0	
			report this value →	**0**	

DIRECTIONS

1. Double click on table to fill out form in Excel. For each reference point, enter the appropriate condition scores as explained in the Implementation Guide. Insert new rows as necessary. Make sure the formatting from the "total" column is copied as well.
2. "Comments" should refer to map of reference points or detail a variation of the protocol used.
3. The "totals" and SUM should automatically calculate in Excel.
4. *If you are not using an active form (with embedded Excel spreadsheet):*
    a. Enter data as described above
    b. Add the condition scores for each reference point and enter each result in the corresponding "total" column.
    c. SUM the "total" column. Enter this result in the Black Box.
5. **BLACK BOX**: Status of native biological communities. Enter this number as the "Value" for Measure 2-1 on the Wilderness Character Data Report form.